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THE ILLUSION OF MEMORY¹

THE illusion of which I wish to speak is the direct awareness of past objects or events that seems to be involved in the process of memory. It is the apparent existence of that which has not only ceased to exist, but is known at the moment of remembering to be non-existent. That we should seem to be aware of objects which, as we know, are not there to be perceived, is of the sort that Kant may have had in mind when he spoke of "necessary" illusions. This is an illusion that arises in the nature of the experience, like that of the moon appearing larger when low in the sky, or the ocean seeming higher at the horizon than it appears to be at our feet. What I take to be illusory is not that memory is knowledge (how could there be any other knowledge without it?), but that it should seem to be an acquaintance with the past. Of course, no one seriously doubts that we do remember instead of merely seeming to remember, nor that in remembering we do have a veritable knowledge of the past. In speaking of an illusion of memory, I do not intend to question the truth of memory judgments, nor to dwell upon the "metaphysical pathos" that goes with meditations about the passage of time. The illusion in question pertains only to the quality or immediacy of the memory experience. In remembering, it is as if things past were nevertheless present, or as if there were a consciousness, a direct awareness, of the presence of remembered events, known to have occurred in the past. Memory, as an experience directly had or undergone, is not only "a remembrance of things past", but literally a "presence of things past", in Augustine's paradoxical phrase.

The apparent contradiction, that the same remembered object

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should seem to be present and not present at the same time and in the same respects, namely, as remembered, is not removed by arguing that the object is present only in its mental presentment, representation, or "surrogate", as an image, trace, or other subjective effect which the real object may have had upon the mind in the past. It may be true that memory operates only through such "inner" effects of antecedent causes from an "external" world, whether these effects be described as states of consciousness or modifications of a nervous system. At best, this argument might serve to explain how the illusion of memory arises, but it will not explain it away or demonstrate that the illusion does not occur. In remembering, it is clear to me at least that I am not perceiving a present representation, image, or trace of a past event. When I remember, and do not merely fancy that I remember, I find myself thinking of something in the past as past, not of a representation, image, or trace that happens to exist at the present moment. Yet the remembered object or event seems to be as directly present and immediately apprehended in my memory as anything that now exists and is perceived in my surroundings, such as the empty chair that I now observe and in which, I may recall, a friend was seated during a remembered conversation. The apparent contradiction remains, and the illusion is inevitably involved, so long as the object of memory, known to be past and thus known to be non-existent, nevertheless appears to be existentially present for immediate apprehension. Normally we are not deceived by the illusion, unless it be in childhood, but the illusory perceptiveness in the memory experience persists. The studies of "eidetic imagery" by the Marburg School have brought out the fact that "perception-like images" in memory are not exceptional, but that the illusion, more conspicuous in the reactions of children, and more vivid in some than in others, is normally corrected by a better understanding of temporal relations in adult life and concealed under a superstructure of conceptual knowledge. Nevertheless, even the ordinary visual memory-image, in the immediacy of its reference to the past, has the illusory appearance of "reproducing" the past in the present.

Analysis of the traditional distinctions among *retention*, *recall*, *recollection*, and *recognition* discloses the same pervasive illusion.

Each of these constituents or species of memory involves an apparent recurrence of past events, and it is difficult to describe the process in any other terms, as witness the prefixes of the cognate words in the Indo-European languages. Even the basic assumption of *retention*, if it means anything more than mere persistence of the effects of past learning or "conditioning", signifies the possibility of reproducing something out of previous experience. An animal with a memory, capable of reflective experience and able to learn from a knowledge of the past, has to pay for this advantage with the illusion of living the past over again. In saying that "analysis" discloses the illusion, I mean analysis of memory in terms of cognition—an epistemological analysis—and not the more restricted kind of analysis in experimental psychology since the work of Ebbinghaus and others on the memorizing of non-sense syllables, random selections of numbers, and the like. It would be preposterous to suppose that experimental studies in memory are the analysis of an illusion, or that there is anything illusory in their results. As inquiries into the conditions and procedures of the learning process, these studies are not directly concerned with the cognitive values of memory in the outcome of the process. An epistemological analysis, however, finds and does not mistakenly postulate an apparent consciousness or immediate knowledge of the past in memory.

The more insistent critics of epistemology are evasive when they say there is no genuine problem of consciousness because the notion of immediate knowledge is only the result of erroneous assumptions. It may be true that any given theory of immediate knowledge is erroneous because of its preconceptions, but it does not follow that there is no appearance of immediate knowledge in the process of knowing objects, past or present, apart from arbitrary assumptions in our theory of the process. In the earliest systematic study of memory, the problem was clearly formulated by Aristotle, even though much of the ensuing theory is dubious to a modern reader. Aristotle wondered how on earth it is that while a mental impression persists, although the thing itself is no longer at hand, one remembers what is not present. That is precisely the predicament in which the illusion of memory arises. It was no chance illusion produced out of Aristotle's mistaken

preconceptions. Nor was it a faulty psychology or wrong conceptions of experience that led Hume to propound virtually the same question: how an idea, considered "not as the representation of any absent object but as a real perception in the mind, of which we are intimately conscious", should be able to "supply the place of an impression", as it seems to do in memory. Here was no artificial problem or arbitrary paradox, but an illusory aspect of memory which Hume discovered in his analysis of it.

In the course of the discussion so far, three different interpretations of the apparent immediacy of memory knowledge have been suggested. The first is that the seemingly immediate knowledge of the past in memory is a necessary or inevitable illusion. The second is that the immediacy of memory knowledge is veridical, but not an immediate knowledge of the past: it is instead an awareness of an image representing an object in the past. The third is that there is no appearance of immediate knowledge, excepting as a result of arbitrary epistemological assumptions. We have now to consider a fourth possibility, that immediate knowledge of the past is not illusory, and that the past is directly perceived as past.

Stout has pointed out that memory functions in two different ways, frequently confused in experimental as well as epistemological analysis. One is the functioning of memory through inferences about the past. Since it is inferential, its judgments are verifiable by further evidence about the remembered objects. In this mode, memory is indirect, not immediate knowledge of the past. It is similar to any knowledge of remote and absent objects that lie beyond the scope of direct observation, but the existence of which can be inferred from the data. We remember in this way when we are asked by some stranger about the location of the recent Exposition in San Francisco, and we answer that it was on Treasure Island. At the moment, it is not necessary to recall having been there in person, or even having seen the place. That the Exposition was on Treasure Island could have been inferred from hearsay evidence, or from the present dismantled appearance of the place itself. There need be no remembrance of the occasion in the past. Memory of this kind is called *impersonal*. As Stout describes it, "what is remembered in these instances is the knowledge acquired

by personal experience, and not the particular incidents connected with the process of acquiring it". It is memory in the sense that any recorded history can be regarded as an organized memory. The other way in which memory functions is through the actual process of remembering incidents from one's own past experience. Stout calls this *personal memory*, and it is in this that the supposedly immediate knowledge of the past is involved. In calling it "personal", he does not mean that this kind of memory is subjective, private, or incommunicable. He means that an individual recalls incidents "as far as possible in the order and manner of their original occurrence".

Personal memory is said to involve a direct and non-inferential knowledge of the past. Instead of being an illusion, it is held to be the necessary condition for all veridical knowledge in memory. The theory of the immediacy of memory knowledge has been defended on two different grounds. It has been argued that the past is necessarily a constituent of present experience; and it has been argued that the past, although not a constituent of present experience, is nevertheless directly apprehended in its pastness. The former view is represented by Bergson and Samuel Alexander, the latter by Stout. Bergson maintains that there is an immediate knowledge of the past, which memory prolongs into the present, since every perception of an object is also an intuitive awareness of a past within the present. The inner duration of a life process is a cumulative one in which a heavier and heavier load of memories is dragged along behind the individual as he grows older, and every moment of his conscious experience involves a feeling of continuity with its past duration. The conclusions of Bergson's argument follow by definition. "Consciousness means memory", he says, and there can be no real duration without the persistence of the past *qua* past, just as there can be no perception of objects without the memories that serve to interpret them. Likewise, Alexander holds that the object of memory (called "the memory" in distinction to "remembering") comes before his mind, "bearing on its face the mark of pastness". He concludes that "the pastness of the object is a datum of experience, directly apprehended", and that the object is compresent with him *as past*. Although the object of the memory is not "contemplated", the memory itself is "en-

joyed", in the sense in which he says that the mind "enjoys" itself and "contemplates" its objects. In *remembering* an incident, such as having once been strongly moved at the reading of a letter, *the memory* of that incident is now enjoyed in imagination, not as present, but as past. "Its enjoyment has pastness written on its face", although the act of remembering, in distinction to "the memory", is enjoyed as present. The point that Alexander never proves is his identification of the "enjoyment" of the mark of pastness with the "enjoyment" of the past existence of the object. Unless this is demonstrated (and it is difficult to see what evidential material could be obtained), he fails to meet the issue whether or not the past is immediately known as past. From the same premises, it might be argued that the mark of pastness is on the face of the pyramids as we see them today. Yet we "enjoy" our sight of them as they are in the twentieth century, not the sight of them as they existed several thousand years ago.

Stout has a more persuasive argument for the immediacy of memory knowledge when he says that "we do not, in remembering the past as such, actually or immediately perceive it", but that, nevertheless, we do "immediately know it". Knowledge is said to be immediate "if and so far as knowledge involves no inference", and he maintains that such knowledge of the past, although not in a strict sense knowledge by acquaintance, is inseparably connected with the actual experience we do know by acquaintance. I should have inferred that this seeming knowledge that is "not in a strict sense knowledge by acquaintance", but "inseparably connected" with the actual memory experience, is no other than the necessary illusion I have been describing. Stout comes to the opposite conclusion. He speaks of memory judgments in which he is unable to find even a "speculative chance of mistake". Unfortunately, his examples are analytic, not synthetic propositions. They are concealed tautologies, having no probative value for the supposed immediacy of memory knowledge. For one example, he offers the statement, "I am, at this present moment, not speaking for the first time but have had a similar experience in the past". In using the personal pronoun, Stout was presumably referring to himself, while reading a philosophical paper on memory knowledge. No one could have doubted that he was a mature person,

familiar with the English language, and any member of his audience, hearing him utter these words, must have known that he was not an infant speaking for the first time in his life. Nor was any memory, mediate or immediate, required to prove that he was not an infant, but a mature and learned person. The statement, "I am, at this present moment, not speaking for the first time but have had a similar experience in the past", is no more than a judgment of perception, "I, a mature person, am now speaking", combined with the tautology, "A person who speaks with previous knowledge of his own language is a person who speaks with previous knowledge of his own language".

C. I. Lewis has called attention to a confusing ambiguity in the interpretation of statements that assert a similarity between present and past experiences. If I say, "This is the same 'yellow' that I saw yesterday", meaning an immediate comparison of a given quality with a remembered quality, it may be that I am making a judgment. Yet this is not what is generally understood by a judgment of qualitative identity. For the apprehension of the quality 'yellow', being immediate, not only stands in no need of verification, but is unverifiable. If there is a comparison of the apprehended 'yellow' with a remembered 'yellow' in the judgment, the comparison is direct and indubitable. However, if I do not intend to speak of qualities as apprehended in a direct comparison of the two; if, instead, I am referring to a property of an object, such as a flower or a piece of cloth, when I say, "This is the same 'yellow' that I saw yesterday", then I am making a judgment involving an inference. The qualitative identity is inferred through a more or less complex intellectual construction. Supposing that the 'yellow' of the flower or piece of cloth is the same that I saw yesterday, I may be able to return to the object, if it is still in existence today, and verify my supposition. Yet I am not able to return to *yesterday's* apprehension of the 'yellow', identical as the quality may be to that in my present perception. My knowledge of the qualitative identity is not immediate. The judgment is capable of verification by actually seeing that the object is yellow, or by obtaining confirmation in a less direct way. No memory judgment is completely verifiable, since further evidence about past events is always obtainable in their subsequent effects, and

there is at least "a speculative chance of mistake". The object may have changed its color since I saw it last, or I may have been suffering from jaundice when first I looked at it. But there is no possibility of error in the immediate comparison of a given and a remembered quality, by whatever means that comparison may have been accomplished. The statement, "This is the same 'yellow' that I saw yesterday", implying an immediate comparison, is "true" in a different sense from that in which verifiable judgments are said to be true. Truth of the first type I have described elsewhere as "aesthetic" in distinction to the "experimental" truth of the latter type. It is said to be aesthetic in the sense that it pertains to the expression of immediate, unanalyzed feelings and the intuitive grasp of meanings. Truth, in the experimental sense of the word, pertains to the results of inference, which are both corrigible and verifiable.

Parenthetically, I may remark that my position differs from that of Lewis's analysis in two respects. The notion of immediately apprehended qualities is epistemologically "neutral" with respect to the distinction between a "subjective" and an "objective" status of data, since the distinction, as I suppose, is derivative from, and not presupposed in, the presentment of qualities. And the immediately apprehended qualities are not on that account ineffable, as I suppose, since many of them, although unnamed, can be "indicated by some circumlocution", as Lewis admits in what he says of the statement that exemplifies the supposed ineffability of qualities, "This is the same ineffable 'yellow' that I saw yesterday".

The conflicting interpretations of memory knowledge are not the result of a mere confusion of terms that might be resolved by verbal definitions, nor are they the result of a verbal disagreement among philosophers who have supposed they were analyzing the same subject matter, when they were actually talking about different matters. Such positivistic "short cuts" are no advance. When someone says, "I remember so-and-so", it is safe to assume that he is exercising the same mental function as does anyone else who says, "I remember such-and-such", whatever differences there may be in the objects they happen to be remembering or in the reliability of their respective memories. If, then, philosophical inquiry conducted by competent and well-informed analysts leads

to contrary conclusions about memory knowledge, the conflict would seem to have arisen out of the nature of the subject matter, and not out of the preconceptions of philosophers who have inadvertently used different data to reach diverse results. On the contrary, the ways in which philosophers have differed on the same questions often contain the most valuable evidence as to the matters in question.

I agree with Lovejoy that whoever says, "I remember", and uses the phrase in its "natural and familiar sense", bears witness to the possibility of mediate or representative knowledge. By the "natural and familiar sense" of the phrase, I understand the sense that it has in common speech, without reference to theoretical issues. Furthermore, Lovejoy has shown, to my satisfaction at least, that there can be no knowledge of the past that is not representative or mediate. For I can remember many things which I am confident have ceased to exist and are no longer present in the physical universe. I remember a particular log that was burned in my fireplace the other day. Its ashes may still exist in the grate, but what I remember is the wood, which has ceased to exist as such, not its present components or "matter" in the ashes. It is a sheer paradox to say that the wood, consumed by the fire and no longer existing as that particular log, has somehow *not* ceased to exist, but may be experienced over again in my present act of remembering; or that, as Stout says, part of the object of a man's thought in remembering is "the actual occurrence of it as he lived through it in the past". Nothing could betray the illusion of memory more unmistakably than the statement of such a paradox.

This is not to deny that personal memory involves a feeling or impression of the immediate presence of the past. My contention is that this sense of immediacy, although unavoidable, is illusory. When I remember the occasion of meeting a friend some time ago, and when I consider attentively my act of remembering, I have an inclination to look or turn in the direction of the place where the meeting occurred; or I seem to be aware of an occurrence that is, in an indefinable way, behind me, as though it were possible to turn around and observe the same occurrence over again. This feeling or impression is manifestly illusory. The object is not really present when it is not present, although it may appear to be

so. Laird has argued that the past is determinate but impotent, the present determinate but powerful, the future indeterminate, therefore nothing real, therefore impotent. Yet the past is not existentially determinate nor is the future existentially indeterminate, and the question of their power or lack of power is meaningless, since neither exists to possess or lack power. It is our present knowledge of the past that is determinate ("knowledge" in the sense of knowing something), and our present knowledge of the future that is indeterminate.

A prevalent view in the psychology of memory is that the remembered past persists as traces, schemata, or patterns of reaction tendencies in an organized mass of past experiences and reactions. Conceived merely as adaptive mechanisms of the organism, such traces fail to account for the factor of "pastness" or "dated recall" in the memory experience. F. C. Bartlett has found in his experimental analysis of remembering that the recall is, psychologically, a construction based on an orientation; which is dominated by the immediately preceding reaction. In order to recall, however, and not merely to react to a present situation through the massed effects of a series of past reactions, there must have emerged an attitude towards these effects and a constructive justification of this attitude on the part of the subject. This requires that the subject be able to "break away" from its initial orientation as dominated by the immediately preceding reaction. The trace, schema, or pattern of organization "must become, not merely something that works the organism, but something with which the organism can work". Bartlett supposes that the factor of recall depends on a "capacity to turn around upon one's own 'schemata'". The "turning around" is what he means by "becoming conscious", and in this process "what is remembered has its temporal mark".

From the standpoint of a dynamic psychology, such as Bartlett's professes to be, it is literally impossible to "turn around" upon anything in the process of organizing past experiences. The supposed "turning around", as the subject becomes conscious of what is remembered, can reverse the process only in a figurative sense. According to Bartlett's account, the recall is antecedently determined by the same "schema" around which the subject is now supposed to be turning. This is a psychological impossibility. We

are asked to assume that the act of recall occurs simultaneously at an earlier and a later moment of time, once when the act is being determined by the schema, and again when the subject is "turning around" the same schema. Yet I know of no better way than Bartlett's to describe what *seems* to be directly involved in remembering.

An illusion, deeply ingrained in memory and "necessary" in the sense that it is pervasive and inevitable, need not be ascribed to a "transcendental" source, prior to or beyond all possible experience. Memory is not necessarily deceptive because it involves a necessary illusion. As in the so-called deception of the senses, its immediacy is specious without being a falsification. Our eyes do not deceive us when the rising moon appears larger than it does at the zenith, or the ocean seems higher at the horizon than at our feet. Did things not appear so, vision would in fact falsify its own perspectives. So it is with memory: did we not remember the past as if it were present in immediate consciousness, and as if some remembered objects were known without even a "speculative chance of mistake", memory would in fact falsify the persistency of its own habits. Memory is illusory only with respect to the apparent immediacy of its own knowledge of the past, that is to say, the apparent "consciousness" or "direct awareness" of past events. In order to establish its cognitive values in theory, such utility or performance concepts as "agreement", "correspondence", "coherence", "adequacy", and the like, are introduced into the analysis of memory. Memory images are then evaluated in terms of remembering and forgetting, clear and vague recall, or correct and incorrect recollection. In its immediacy, memory "agrees" or "disagrees" with its objects, its images are more or less "coherent" in its organization of past experiences, their content is "adequate" or "inadequate" to the "reality" of the past. But analysis of memory knowledge in these terms alone is invalidated by the illusion of memory. If such utility or performance concepts are to acquire a legitimate sense in a dynamic psychology, as K. Lewin has remarked, "an 'illusion' will have to be characterized not epistemologically but biologically". The immediacy of memory may then be as illusory as we have maintained, but the appearance has its natural basis in the functioning of habits. The sense of familiarity

in the routine performance of habits, the feeling of "warmth and intimacy" that James identified with the consciousness of self, makes a remembered past seem to be more or less vividly present in its own psychological environment. There is no reason to suppose that the dynamics of "life spaces", so brilliantly analyzed by Lewin, does not apply to past as well as to present psychological environments, and the "topology" of personal memories (as distinguished from impersonal memory, in Stout's sense), no less than the "topology" of different perceptual situations, will be seen to involve a plurality of "life spaces".

By the word *habit* I shall understand what Peirce means when he says that "it denotes such a specialization, original or acquired, of the nature of man, or an animal, or a vine, or a crystallizable substance, or anything else, that he, or it will behave, or always tend to behave, in a way describable in general terms upon every occasion (or upon a considerable proportion of occasions) that may present itself of a generally describable character". It is as habits, so conceived, that personal memories are capable of constituting a knowledge of the past. The apparent immediacy of that knowledge is in the quality of habits in their present duration, and not in the occurrence of the known antecedents from which the habits have been acquired. Habits of thought, functioning as memory, like habits of any kind, are specializations of reaction tendencies and are as such characteristic of all activity, inanimate as well as animate, with respect to its regularities. Habits are the differential determinations of behavior through which increasing regularity and uniformity of reaction are displayed. "All things have a tendency to take habits", says Peirce. "For atoms and their parts, molecules and groups of molecules, and in short every conceivable real object, there is a greater probability of acting as on a former like occasion than otherwise. This tendency itself constitutes a regularity, and is continually on the increase". The universality of the principle of habit implies a permanence of *relations* between future possibilities and present occasions, not a substantial permanence of things in the past. "Habits, from the mode of their formation, necessarily consist in the permanence of some relation, and therefore, on this theory, each law of nature

would consist in some permanence, such as the permanence of mass, momentum, and energy".

The physical concepts of mass, momentum, and energy have a strictly relational meaning, formulated in terms of mathematical functions. There is, however, an assumption in the exposition of modern physical theory that goes beyond these relational concepts and their expression in mathematical functions. It is the assumed principle of the conservation or indestructibility of matter, in distinction to the formulas for the conservative functions of mass and energy. The assumption involves concepts difficult to reconcile with the mathematical and experimental operations of modern physics. They are the "thing-concepts" of a material substance or substratum which Ernst Cassirer has so clearly contrasted with the "relation-concepts" of functions. Mass, momentum, and energy are conceived as attributes or properties of an indestructible matter, persisting through an immutable past. The speculations about *Physis* in early Greek philosophy, which first made this assumption explicit and gave rise to the "thing-concepts" that have bedevilled the interpreters of modern physics, received their "primary datum", as Cornford has put it, from the traditions of poetry and religion. The notion of an immutable reality, whether conceived as indestructible matter or imperishable forms, is not a product of philosophical speculations, much less a discovery through scientific inquiry, but a presupposition of all causal explanations, mythological, philosophical, and scientific. Its source is the illusion of identity between the present duration of an act of memory and the past existence of its remembered object. It is as though there were a storehouse of past events that remains perpetually present and accessible, so that something that happened a moment ago, or yesterday, or last year, or at some indeterminate period in the past, is recoverable out of that enduring supply of memory. The notion of indestructibility is bound up with the notion of memory, as Plato clearly recognized, and his theory of learning as *anamnesis* was appropriately introduced as a myth in the *Meno*. With all of its later dialectical subtleties, the "proof" of the theory remains mythological, since its sole empirical evidence is the illusion that necessarily accompanies personal memory.

A philosophical equivalent for this assumption in the history of ideas has been "the principle of plenitude", comprehensively described and illustrated by Lovejoy in *The Great Chain of Being*. It is "the strange and pregnant theorem of the 'fullness' of the realization of conceptual possibility in actuality". According to this principle, while every phenomenon is unique, and there is a degree of novelty in its occurrence, its real character is produced out of a complete and inexhaustible source of materials, so that the conceptual possibility of the existence of a particular phenomenon is wholly commensurate with an antecedent productive capacity in nature. When the conservation of matter is construed as the permanence or indestructibility of a material substance, the principle of plenitude is presupposed. The physical universe is replete with matter, deployed in space or a spatio-temporal continuum, and matter is capable of assuming every conceivable shape and velocity in its changing configurations, insofar as these are in conformity with the laws of motion and the structure of the atom. Lavoisier clearly presupposed this principle of plenitude in his classical formula for the conservation of matter, "that in every operation there is an equal quantity of matter before and after the operation". A thousand pounds of wood is equal in weight to that of all of its components in ashes, smoke, and atmosphere after the wood has been burned. The fact has been and can be again and again verified experimentally. Meyerson has assured us that the verification of Lavoisier's principle was, at the same time, a victory for the generalized principle of the conservation of matter. But we are not told how anything "indestructible" can be experimentally discovered in such an operation as combustion. What is this "conservation" other than the constancy of the mathematical values in the measurement of the process? If the principle meant only that certain components of wood, or whatever else, do maintain their respective identities throughout the measured process of combustion, (in the ordinary sense that eleven football players are the same men after their team has disbanded as before they started the game, or the same men are "counted off" in a platoon after an engagement as they were before it), no one would be inclined to suppose that any conservation is involved beyond the fact of their continued existence. Indeed, we should have no reason to say that

these components consisted of an indestructible matter, unless we had assumed not merely that the same components are involved in successive stages of the operation, but that an antecedent state or condition of these components, as it existed in the past, is reproduced in their present state or condition, as they are now operating in the actual process under observation. Why should we make such a superfluous assumption with its consequent difficulties for the generalized principle of conservation? I can find no empirical grounds for the assumption besides the specious presence of the past in memory. It belongs to an uncritically accepted tradition that goes back to the earliest speculations about the physical universe, and it is, if the foregoing analysis is correct, the outcome of an illusion.

Physical theory, in popular exposition at least, is still haunted by the notion of prime matter and its infinite potentialities, an "ageless and deathless" stuff out of which every possible body is composed. The pitfalls and fallacies in its arguments have been repeatedly exposed, but the notion lingers on to the confusion of theoretical explanation. The conservation of matter, as a general principle, has been declared to be self-evident or to be an *a priori* necessity of thought. Spencer's statement, that those who question the principle are merely supposing themselves to think what they do not think, can hardly be taken seriously, since there is no way of determining that a noted physicist, such as Sir James Jeans, did not actually think of the annihilation of matter, when he affirmed it, but merely "supposed himself" to think it. Within the limits of experimental inquiry, the principle is relatively and hypothetically true of operations, observed and observable. When the conservative functions are given a strictly operational meaning, the energy concept can be extended from mechanical to thermal systems involving the generalized conservation principle as the first law of thermodynamics. Experimental application of the energy concept to optical and electrical systems, as it has been applied to mechanical and thermal systems, gives further reason to believe that the conservation principle holds true of all known systems without exception. The interdependence of energy and mass, as understood in relativity theory, shows that the two conservative laws may be combined into the single conservation prin-

ciple of mass-energy. However, it is not clear from their popular expositions, at least, how Jeans and some of his fellow scientists can consistently deny the absolute permanence or indestructibility of matter without denying the ultimate unity of the two conservative laws of mass and energy.

The question then arises in what sense matter can be "conserved", if it is not assumed to be indestructible (a) in terms of mass, (b) in terms of energy, or (c) in terms of the two in combination. From the standpoint of an operational analysis of the concepts, it has been answered (a) that the Newtonian definition of mass as *quantity of matter* has no intelligible meaning, since no conceivable conditions could be devised under which the total inertia of the material particles could be measured. Conservation of mass, inferred from the constant number of protons and electrons, or other particles in a material system, is experimentally unverifiable. And (b) if the generalized conservation principle meant only that the sum of kinetic and potential energy in an isolated mechanical system is constant within its frame of reference, then the conception of the conservation of matter in classical mechanics becomes merely irrelevant. For the kinetic energy, and consequently the sum-total of energy, may be changed by giving velocity to the frame of reference in which the system is described. Bridgman is led to conclude that the conservative functions in mechanics mean only "the possibility of describing natural phenomena with differential equations". There is no reason to suppose, and indeed it is demonstrably false, according to Bridgman, that energy, like matter and its properties, is localized in space. In view of the more recent developments in quantum mechanics, energy can no longer be regarded as one of the *properties* of a material system. Finally, when it is argued (c) that matter is indestructible because the combined conservation of mass and energy involves a more general principle, a valid generalization is overstated, and this erroneous overstatement has been exposed by Whitehead in the Fallacy of Misplaced Concreteness. The matter, supposedly conserved in the total mass and energy of a material system, is conceived as a "nature", "stuff", or "substance", having the property of *simple location* in space and time. Its spatio-temporal region may be absolutely or relatively determined, but this makes no difference

so long as each of its particles is assumed to be "just there, in that place", without reference to any other regions in the explanation of its particular position. There is an instantaneous configuration of matter in each of its locations, irrespective of any relation that may obtain among the positions of other material particles in analogous regions. Whitehead has said that the fallacy consists in mistaking the abstract for the concrete. His subsequent and more exact statement of the fallacy in *Process and Reality* ascribes it to "neglecting the degree of abstraction involved when an actual entity is considered merely so far as it exemplifies certain categories of thought". In terms of the present analysis it might be said that the fallacy consists in neglecting the degree of abstraction involved when a remembered object is considered merely so far as it exemplifies mathematical categories without reference to the concrete conditions of individual "life-spaces".

The "evanescence of matter" in 19th century science, to borrow Dampier's convenient phrase, has left the duality of *matter* and *field* as yet unresolved in contemporary physics. Material configurations in mechanics are not reducible to the field concepts of energy. If the luminiferous ether was once required in order to provide a subject for the verb, "to oscillate", so it may be that an indestructible matter is still required in order to provide terms for differential equations. Relativity of material systems in their several frames of reference argues the more strongly for the substantial contents of their fields. The evanescence of matter in the guise of Newton's hard, massy particles seems to have been but a step towards its reappearance in the guise of electromagnetic energies. *Naturam expelles furca, tamen usque recurrit!* Along this line Planck has argued that the concept of material substance performed a necessary function in the history of science. It has made it easier to grasp the meaning of the generalized conservation principle, and hence has facilitated its further applications in physics. However, the assumption of an indestructible matter, in serving to explain the conservation of mass and energy, is regarded by Planck as no more than an imaginative device. Granted that it has proven indispensable for physical inquiry in having given the clue to further advances on innumerable occasions, the concept of substance is henceforth to be used "with the utmost

caution", and then only within known limits of exact measurement. The meaning of *matter*, conceived as substance, is to be determined entirely by the method of measurement and its logical implications.

While the duality of matter and field corresponds to the two conservative functions in contemporary physics, it is not clear what is meant by the distinction between the conservation of mass and energy, on the one hand, and the conservation (or "indestructibility") of matter, on the other. The technical import of the conservative functions, "determined entirely by the method of measurement and its logical implications", is not in question here. Presumably, there is nothing intrinsically unintelligible in these functions. Even the lay reader, however inept he may be in mathematics, should be able to gain a general understanding of what "conservation" means in the conservative functions and their respective laws. For it is no exaggeration to say that there has never been more gifted writing in the popular exposition of physical theory, especially in its more speculative aspects. Einstein, de Sitter, Planck, Weyl, Whitehead, Eddington, Russell, Jeans, Bridgman, Lenzen, to mention but a few of these eminent expositors, have made it possible for the "general reader" to appreciate the simplicity of structure in the modern world of physics, however much he may understand or fail to understand about the physical world in which he lives. Have the two "worlds" the same content and significance in discourse? All of these distinguished writers hint at some further meaning of the conservation principle beyond its technical implications for mathematical and experimental physics. Even Bridgman, rigorous as he is in limiting the interpretation of physical concepts to "sets of operations", confesses to an undeniable "feeling" that there is "some sort of conservation property" of matter, "more deep-seated" than energy, and that there is something more to the "force" acting upon a body than can be measured in terms of its acceleration.

According to Lenzen, the generalized conservation principle refers primarily to the constants in a dynamical system consisting of particles. The total mass of the system is one of these constants. Another is its total momentum, which remains constant on the assumption that no external forces are acting upon it. A dynamical

system is supposed to contain a fixed number of particles, each of constant mass, although it may be difficult, if not impossible, to give any operational meaning to this constant, as Bridgman has contended. Does the generalized principle of conservation mean anything more than the fact that there are constant quantities in the measurement of systems, whether these constants are deductively or experimentally determined? Poincaré has said that this is all that we are entitled to assume, *viz.*, that *there is something which remains constant*. The assumption is warranted because there are such basal quantities in the description and measurement of natural phenomena. The "something" may be the physical quantity, *mass*, in mechanical theory, electric *charge* in electrodynamic theory, or the constants of *gravitation* and *inertia*, which, if not identical, are at least measurable by the same quantity, *mass*. In strictly mathematical and experimental analyses, physicists are not concerned with the "nature" of that which remains constant, other than the constancy of these measurable quantities. When, however, these same men are addressing not their fellow scientists, but those eulogistically and collectively called "the general reader", they allude to something within, beneath, or behind the physical constants, like Locke's "something-I-know-not-what", with its "real essences". Electricity and magnetism, light and heat, and other pervasive conditions in the physical universe are adequately accounted for under a variety of hypotheses, but gravitation, says de Sitter, "is entirely independent of everything that influences other natural phenomena. It is not subject to absorption or refraction, no velocity of propagation has been observed. . . . Gravitation acts on all bodies in the same way, everywhere and always we find it in the same rigorous and simple form, which frustrates all our attempts to penetrate into its internal mechanism". This is the more mystifying to the reader for having been introduced to the exact and verified results of analysis in the earlier parts of the exposition. To speak of a mechanism that is unanalyzable is as though to say there is a true explanation that explains no observed or observable facts. The supposed permanence or indestructibility of "something which remains constant" is not made any more intelligible to the reader when he comes upon such deliverances as that by Jeans in *The Mysterious Universe*, comparing the universe

to the surface of an expanding soap-bubble, and asserting that "the substance out of which this bubble is blown, the soap-film, is empty space welded into empty time".

Problems concerning the fundamental constants of mass, energy, gravitation, and inertia are ultimate or metaphysical problems, not merely because they come after the exposition of physics, but because their solution requires evidence beyond the scope of scientific inquiry. Whether metaphysics be viewed with favor or disfavor, the attempt to answer such questions involves metaphysical speculations about a "something which remains constant". Physical theory is then placed in a difficult dilemma. The limitations of its method preclude the validity of any proposed solution, while the conclusions to be expounded contain difficulties to which only speculative solutions are obtainable. Since none of these proposed solutions can be valid on scientific grounds, insoluble difficulties for physical theory ensue in the very terms of its exposition. Manifestly, many of these difficulties, if not most of them, have resulted from the attempt to explain mathematical concepts in non-mathematical language; but it is equally clear from the statements of experts writing for the general reader that there remains a residue of ultimate problems, for which no satisfactory answers are as yet available.

Meyerson has traced these difficulties to a confusion between two different types of explanation in physical theory. One is the establishing of an identity between a causal antecedent and its consequent. The other is the subsumption of phenomena under a law. The second type of explanation is said to depend on the first. Search for rational understanding of the world is a quest for absolute identity in a diversity of phenomena. Meyerson contends that the ultimate problems concerning conservation of mass and energy are due to the persistent demand for unity in the representation of the physical universe. Notwithstanding his detailed and erudite arguments, he has not made clear why a demand for unity or a quest for identity is supposed to be rational, when every attempt to satisfy this demand gives rise to the contradictions and paradoxes that Meyerson has so abundantly illustrated. And if the quest for identity, prevailing in scientific inquiry, is not a rational demand, then one of two alternative inferences may be

drawn: either questions have been improperly formulated so as to preclude any meaningful answer, or else presuppositions in the interpretation of physical theory are conflicting. The connection between the illusion of memory and the notion of an indestructible matter indicates that the difficulties may be due mainly to conflicting presuppositions, and not to the asking of meaningless questions. For it is a mistaken logic, as Collingwood has made amply clear, and it is besides in opposition to all of the evidence in the history of thought, to argue that no significant answer can be given to any question unless its presuppositions are mutually consistent; or, what amounts to the same thing, that no significant analysis can be made of conflicting presuppositions because the questions involving them are "pseudo-problems". To take a single example among many, the history of materialism from Democritus to Spencer shows how fruitful the analysis of such conflicts can be in the development of psychological as well as philosophical theories of mind. The progress has come as a result of, and not in spite of, two conflicting presuppositions, one, that nothing is real except matter and space, the other, that there is a real difference between material things in space and non-material states of mind.

In the problem of conservation, the presuppositions in conflict are the continuity of time and its division into past, present, and future. For no part of time can be past unless it has come to an end before a present time has begun, and no part of time can be future that has begun before a present time has come to an end. Present and past events are separate from one another, as they are from future events, but there is a continuous transition of events in time. Temporal continuity is signified by the notion of *duration*, with its implied distinction of "earlier" and "later". The notion of *succession*, with its implied distinction of "before" and "after", signifies the separateness of past, present, and future. In the theory of a specious present the two conflicting presuppositions are speciously reconciled. The assumption that a budding present grows within a fading past is but a token of the illusion of memory. It may be true, as Alexander has said, that Bergson was "the first philosopher to take Time seriously", but the *cliché*, like all such sayings, has tended to obscure the importance of its insight. Bergson's discovery was that time is no mere succession of moments,

days, or years, but a real duration, immediately felt through its continuously changing qualities. He found that time, apart from the activity and duration of organisms in their changing environments, is an artificial abstraction, a "spatialization" in which the temporal sequence is conceived as a fixed mathematical series. Time is essentially succession *in* duration. To identify time with duration alone is to think of it as "a moving image of eternity", or as an "infinite mode" of an eternal substance, with the real divisions of time left out. To identify time with succession alone is to think of the parts with its continuity left out. In short, Bergson found that the permanence of matter, persisting through successive changes in the duration of material objects, is known to us through the felt continuity of our habits in memory. What he did not, and indeed could not discover, on the basis of his evidence, was that memory is a direct, intuitive knowledge of objects *as these objects existed in the past*. "We are going to pretend for a moment", says Bergson at the beginning of his *Matière et Mémoire*, "that we know nothing of any theories of matter or theories of mind, nothing of any discussions about the reality or ideality of the external world. *Me voici donc en présence d'images.*" The pretense must have been abandoned with the opening sentence, for if he supposed himself to be "in the presence of images", whenever he "opened his senses", it was only by virtue of an intricate theory of mind with an equally intricate theory of matter. No one unacquainted with discussions about the reality of an external world could have come to regard his own body as a "privileged image" in an "ensemble of images" called *matter*; or could have thought this privileged image to be a centre of action among other images, which become its objects as they reflect its possible actions upon them. Without these theoretical premises, however, Bergson could not have reached his paradoxical conclusion that all perception is memory. Nor could he have made intelligible or relevant his metaphor of the past "gnawing" the future: "*nous ne percevons, pratiquement, que le passé, le présent pur étant l'insaisissable progrès du passé rongéant l'avenir.*"

It is not, I trust, with any lack of respect and admiration for Bergson's insight and the contribution he made to a philosophical theory of time, that I have come to regard his account of memory

knowledge as precisely the reverse of the facts. He concluded that intellectual activity falsifies its immediate data because of its indirect, inferential, and analytical procedure. The intellect, inevitably turned as it is towards future possibilities of action, can gain no genuine knowledge of the past. Only through intuitive feeling, "the least penetrated with intellectuality", can we know the past as it is in reality, which means as it is supposed to be in real duration, "the past, always moving on, swelling unceasingly with a present that is absolutely new". But if, as I have argued, the apparent presence of the past in memory is illusory, it is "intuition" and not "intellect" that falsifies the data. A genuine knowledge of the past is indirect and inferential. It is to be gained through activities of observation, analysis, and inductive generalization, precisely those activities that Bergson has deprecated as the work of intelligence. The trouble with his theory of intuitive certainty and intellectual falsification of the past is that, along with Time, he took the illusion of memory seriously.

Time is continuous in the tendency of all things to take habits, and so, as Peirce has said, to constitute a regularity "with a greater probability of acting as on a former like occasion than otherwise". The divisibility of time, whatever relative standards and units of measurement we may employ, is in the unique and unpredictable quality of passing events. It is the novelty of their particular occurrence, and not the individuality of their forms or characters, that is irrecoverable in memory as it is unpredictable in expectation, thus separating a past and a future from the perceivable present. Memory is knowledge of regularities in the interaction of our own habits with the habits acquired by things around us. Thereby, particular events in the passage of time are universalized and are capable of being viewed *sub specie aeternitatis*. In Santayana's fine version, "nothing, according to Spinoza, is eternal in its duration. The tide of evolution carries everything before it, thoughts no less than bodies, and persons no less than nations. Yet all things are eternal in their status, as truth is. The place which an event fills in history is its inalienable place; the character that an act or a feeling possesses in passing is its inalienable character". If there is a "something which remains constant" in any temporal process, it is its pattern of relations—a form or idea, in Plato's use of the

word—and not the material content of the events in their particular occurrence. Conservation of the past, through the tendency of things to take habits, is essentially persistence of relations, whether within human memory or apart from it. The illusion of memory has tricked us. Instead of seeking certainty in the progressive understanding, use, and control of present materials, destructible and manipulable, as they are, but also potentially destructive, we have sought certainty in the material existence of a past that has perished. This backward looking faith in the indestructibility of matter gives us a false sense of security. To paraphrase Berkeley, it leaves us only with the ghosts of departed events.

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THE CONCEPT OF REALITY IN PHYSICAL THEORY¹

I

IN THE development of thought scientific constructions have provided problems and points of view for philosophy. Pythagorean mathematics set the Platonic problem of the origin of knowledge of invariable forms; the mechanics of the seventeenth century forced modern philosophy to consider the influence of the determinism of physical processes on the spontaneity of volition; the theory of evolution has provided a foundation for naturalism in contemporary philosophy. During the past several decades new concepts and principles have been created for the description and interpretation of physical phenomena. In this address I shall set forth the contribution of the new developments to a concept of reality.

The new physical theories command philosophical interest for several reasons. Newly formed concepts require reflective analysis in order that their significance may be clarified and their function in a general scheme determined. In such reflective analysis, which is an integral constituent of scientific creation and distinct from the routine application of concepts in the interpretation of experience, philosophy and science participate in a common task. Furthermore, novel scientific procedures need to be codified by logic. Thus H. Reichenbach has shown that quantum mechanics with the concept of indeterminacy furnishes an example of three-valued logic. My present purpose, however, is to analyze the content of contemporary physical theories in order to abstract the concept of reality which is involved. If, as some philosophers have declared, the primary concern of metaphysics is the definition of the real, the outcome of this investigation may furnish elements for a comprehensive theory of reality. Science has, indeed, determined in part the content of historical metaphysical systems. The numbers of Pythagorean mathematics were hypostatized in the realm of eternal ideas. The scientific achievement of the early modern era was the demonstration that the motions of material bodies constitute a causal order within the frames of space and

¹ The presidential address prepared for the Pacific Division of the American Philosophical Association, December 1944.

time. This result received metaphysical acknowledgment in the principle of Descartes that the essence of matter is extension, in the postulate of Spinoza that extension is an infinite attribute of God, in the speculation of Newton that space is the sensorium of God, and in the Kantian theory that space and time are a priori forms of intuition of the mind. The concepts and first principles of a science have furnished raw material for metaphysics as well as problems for reflective analysis. In fact, the integration of the general concepts of science into a metaphysics has been held to provide rational sanction to science. In accordance with this point of view Kant provided a metaphysical basis for the Newtonian system of the world. Partly as a consequence of Kantian doctrine, in the nineteenth century the concepts of space, time, and matter came to be acknowledged as indispensable elements of physical theory. The new physical theories of relativity and the quantum have been opposed philosophically on the ground that the basic concepts of classical physics are intuitively self-evident. The lesson of the history of science is, however, that as a scientific movement brings to light new phenomena, new concepts and principles must be formed for their interpretation. While reflective analysis plays an essential role in new developments, it is the new phenomena which primarily determine a revised concept of reality.

It might be contended that the significance of science for a concept of reality is null in view of the operational theory of scientific, specifically, physical concepts. According to this doctrine, the concept of a physical quantity expresses, not an essence of reality, but a procedure for finding values of the quantity by measurement. The only factors in addition to operations are numerical measures which stand in functional relations to the measures of other quantities. From the standpoint of operational theory, the analysis of science for the purpose of abstracting a concept of reality would be fruitless by definition. To this criticism one may reply that the process of measurement involves the institution of a relation between a system being investigated and some apparatus of observation. Preparation of apparatus and system, and institution of a relation between them, require operations by the experimenter. For example, in measuring the length of a rod one controls the temperature and other properties of the rod as well as of the

standard of length, and then lays off the standard on the rod which is the object of measurement. These operations establish coincidences between points on the given body and the standard of length. The nature of length as a physical quantity resides in such coincidences between points. A pattern of coincidences of points is a character of physical reality which is to be distinguished from the operations required to establish it. Other kinds of measurement involve physical interactions between system and apparatus. For example, the coil of an ammeter interacts with the electric current that flows through it. The basis of measurement of strength of current is that a variable quantity which characterizes the current is functionally related to a quantity of the apparatus, so that a perception of the apparatus, i.e., of the position of the pointer on a scale, permits an inference to the current strength. The numerical measures, in terms of which the results of measurement are expressed, designate physical quantities which are terms to functional relations instituted by the operations. A functional relation between numerical measures expresses a functional relation between quantities. The quantities are to be distinguished from the measures as well as the operations. The problem of abstracting the concept of reality from physical theory, accordingly, is one of the analysis of the physical significance of mathematical expressions. The physical significance of symbols is the basis of ontological significance.

II

In view of the preceding justification of its significance for the cognition of reality, I take up the analysis of physical science, the problem of which is the description and explanation of general properties and processes of natural bodies in man's environment. Since the creation of science in antiquity, objective bodies have been conceived to be portions of "stuff" distributed throughout space and enduring in time. I shall first consider the nature of "stuff", or substance, of the physical world.

The nature of the origin of things was the initial problem of Greek philosophy. The Milesian school sought a unitary "stuff" the variable manifestations of which constituted the different kinds of things. Thales designated the origin of things as water; he

thereby conceived the nature of "stuff" to be most adequately exemplified by the properties of that common liquid. The utility of Thales' concept of a unitary reality may be attributed to the vagueness of conception of the essential attribute of that which remains the same in changes of appearance. After Anaximander made a virtue of indefiniteness by his concept of the infinite as the extra-empirical ground of perceptible things, Anaximenes conceived the basic "stuff" as air, of which the capacity for compression and rarefaction provided an explanation of qualitative changes. The Milesians failed to specify the property which remains self-identical in the variable modes of manifestation characteristic of different kinds of things. Progress was made by the atomists who reduced things to assemblies of atoms which were characterized in terms of invariable spatial forms. W. Heisenberg has declared that this step achieved analytic comprehension at the cost of intuitive understanding of sensory qualities. Geometrical configurations only provide a frame to which sensory qualities may be referred.

At the beginning of the modern era Descartes characterized the essence of material substance as extension, but such a reduction of matter to space was premature. The concept of mass, clearly formulated by Newton, was formed to express the essence of matter. The fundamental role of mass in the modern era is demonstrated by Kant's principle that the permanence of substance is expressed by the constancy of the total mass of the bodies that participate in a chemical reaction. What is mass for a concept of reality? Mass has been defined as quantity of matter, but this definition is verbal. A better definition states that the concept of mass expresses the quantitative measure of inertia. Inertia is the capacity of a material body to resist some other body that acts to change the state of motion of the former. The only specific intuitive basis that I can find for this concept is the complex of muscular sensations experienced when one starts a massive body in motion; for example, when one hurls a stone. The sensations, however, are an indication of the force which originates in the muscles and only mediately are an aspect of inertia. There is no specific sensible quality for the physical property mass. Critical analysis of the foundations of mechanics assigns to the quantity mass the role

of dynamical coefficient. In descriptions of bodies mass is represented by a numerical measure which is assigned in terms of the results of experiments. The numerical measure of mass may be determined as equal to that of a standard of mass, if the beam remains horizontal when the two bodies are attached to the respective ends of an equal-arm balance. The numerical measure of mass may be determined from the ratio of the force to the acceleration; it may be determined from the ratio of accelerations of two bodies in an interaction such as a collision. The statement that material bodies have mass, should bring to mind images of physical situations in which bodies interact in various ways. Mass is attributed to bodies from the mode of their behavior in an environment. Kinds of matter can then be characterized by density which is mass per unit volume. On the atomic theory kinds of atoms have been distinguished in terms of atomic weights. In the light of the foregoing analysis mass as a property resides in characteristic patterns of events in which bodies participate.

Another physical quantity which may characterize bodies is electric charge. The Greeks knew that if amber is rubbed small bits of matter will fly to it. Our cognition of electricity is founded on such phenomena; more precisely, electric charge is attributed to bodies on the basis of determinable forces between charged bodies. Like mass, electric charge is a property that resides in characteristic patterns of events in which bodies participate. There is no specific sensory quality of electricity, unless an electric shock can be interpreted as an immediate experience of charge. The interpretation of electrical phenomena led to the formation of a concept of electrical fluid, which ultimately came to be subdivided into corpuscles carrying electric charges. Electric charge then became fundamental; indeed, it has displaced mass as the basic character of physical reality. An electrical theory of matter was created towards the close of the nineteenth century. The term electricity has been derived from the Greek word for amber. While Thales declared that the "stuff" of things is water, on the electrical theory of matter one could say that physical reality is amber-like. But the selection of amber in place of water for an image of physical reality does not bring us closer to the nature of physical reality. Just as the image of water fails to exemplify an essence

that is appropriate to a unitary "stuff", so does the image of amber by itself lack specific exemplification of electric charge. The concept of electric charge expresses a pattern of events in which charged bodies participate.

The transformation of the concept of physical reality may be illustrated by the remark that to Thales the nature of material substance was most adequately disclosed when he fell into a well, to Newton when his head reacted to the legendary apple which fell upon it, while to a modern physicist physical reality is most intimately revealed when he experiences an electric shock.

The theory of electrified corpuscles is correlated with that of radiation which is a mode of transfer of energy through space. An electric charge excites an electromagnetic field which is conceived to mediate the mutual actions of the charges. The field was initially viewed as a mathematical device, then it was interpreted as a state of a material ether, and finally, it has been accorded the status of a physical reality. Indeed, attempts have been made to explain electrified corpuscles as singularities in the electromagnetic field. In contemporary theory individual electrified corpuscles have only relative permanence, for under special conditions transmutations into one another can occur among the elementary constituents of physical reality.

The introduction of the concepts of electrified corpuscle and of radiation into physical theory raises a problem of reality that goes beyond the nature of mass or charge. One may concede that there are bodies, demonstrably real in the sense of being perceptible, to which are attributed mass or electric charge. But the very reality of the corpuscular constituents of matter and of radiation has been questioned. Perceptible bodies may be acknowledged to exist, but electrons are not perceptible, and, with radiation, may be only intellectual constructions for the ordering of cognitions.

Let us first consider radiation. The concept of a quality, such as blueness, is abstracted from percepts; physical theory then correlates to blueness a wave motion of specific wave-length. Now the image of a wave may be derived from the perception of waves on water, but a wave of light is not perceptible in the same sense. When one perceives light, one experiences a quality such as blue-

ness but not the waves. The light wave is postulated in order to explain the perceptible quality; the structure of the wave is designed to explain the distribution in intensity of a color in an experiment on interference, but there is nothing in wave motion that explains the quality. C. I. Lewis has declared that a physical object can be said to be real only if some sensuous experience or imagery of it is possible in principle. Waves of light are not real on such a criterion. To assign by imagination properties to waves of light which they are designed to produce is self-contradictory. Thus the concept of wave motion is a construction of a hypothetical object which serves as a frame of reference for experiences.

The electrified corpuscle is removed a step further from perception than radiation. Such an assertion may seem unjustified, since many experiments can be interpreted as demonstrating the reality of atomic objects. The interpretation of phenomena, such as the Brownian movement, scintillations on screens, and tracks of drops of water in cloud chambers, has, indeed, demonstrated that the behavior of perceptible bodies can be correlated with the behavior of individual hypothetical atomic entities. But this result does not confirm more than a hypothetical status for atomic objects. The error of Mach was not that he characterized atomic objects as constructs, but that he failed to foresee their continued theoretical value. According to the criterion of reality of C. I. Lewis, an electron can be granted reality only if it is possible to imagine the perception thereof. The perception of an electron would require that radiation scattered by a single corpuscle produce a distinct sensory experience. If this phenomenon could be produced, the electron, which is doubly removed from perception, would still retain its hypothetical status.

Since ordinary bodies are conceived to consist of electrified corpuscles that emit or scatter light which is correlated with the perceptions of those bodies, the hypothetical status of radiation and atomic objects is communicated to ordinary bodies as objects of physical inquiry.

The hypothetical status of the basic constituents of the physical world has been strengthened by the limitations which have been imposed upon the applicability of classical concepts by Bohr's principle of complementarity. The electron, for example, was originally

described as a corpuscle, but has been found to manifest wave properties. Radiation was pictured as wave motion, but was discovered to exhibit corpuscular properties. Corpuscular and wave concepts separately have a restricted applicability to the same constituents of physical reality. The same entity, electron or radiation, can be conceived as a corpuscle or as a wave within limits defined by a principle of indeterminacy. The mathematical theories which are based on the two opposing pictures have been demonstrated to be identical. The dualist employment of corpuscular and wave pictures is interpreted to demonstrate that one should not think of an electron as in reality a corpuscle, of which the position and momentum can not be measured simultaneously with perfect precision. A corpuscle, of course, is characterized by determinate position and momentum. The inadequacy of the corpuscular picture is expressed through Heisenberg's principle of indeterminacy which defines the limits of precision with which the concepts of position and momentum can be applied simultaneously. The picture of a corpuscle is derived from large-scale experience, and is then applied as an analogy to the phenomena of microphysical objects. The acknowledged analogical function of our pictures of corpuscle and wave in physical theory lend support to the constructional status of these physical realities.

Whatever ontological status be granted to the constituents of the physical world, the concept of "stuff" has been developed to a refinement of precision far beyond the primitive constructions of the Milesians. The nineteenth century picture of a physical reality consisting of atoms, which collide like idealized billiard balls and of which the essential property is mass, also has become obsolete. Instead, we picture the elements of the physical world as electrified corpuscles or waves. The materialism based upon mechanical concepts certainly is outmoded for metaphysics.

III

Analysis of the concept of physical reality involves consideration of the frames of space and time. The characteristic doctrine of Newtonian mechanics is expressed by the statement that material bodies were posited in absolute space and their changing states were arranged in absolute time. I now take up the transformation

of our concept of physical reality entailed by the relativization of space and time.

Space is a form of relatedness of things. A concept of space is expressed by propositions which state relations, such as, that a given thing is between two other things. Space may be described as a structure of positional relations. A theory of space is expressed by the description of procedures for specifying the position of bodies. Thus, as Leibniz expounded, space is an order.

The distinguishable factors in a datum of perception stand in spatial relations. For example, visual data are extended in at least two dimensions, and are terms to relations such as betweenness, being to the left of, and aboveness. The space of perceptual data is relative to the individual organism; space, as a stage for cosmic events, is constituted by relations between objective bodies. Perceptual, or intuitive space, however, is the basis of the cognition of physical space. From spatial properties of the data of perception one determines the spatial properties of bodies; for example, coincidence of perceptual aspects of bodies from diverse points of view, is the basis of determining coincidence of points on bodies in objective space.

Physical space, which is a primary concept of natural science, is a form of relatedness of objective bodies. The characterization of space as a form of relatedness of events, or as a form of intuition, leaves its structure undefined. The determinateness, or structure of space, is founded on specific properties of bodies; the metrical structure of space is constituted by the positional relations of practically rigid bodies. This doctrine has been expressed by Einstein in the statement that space is the totality of possibilities of relative position of practically rigid bodies. In the realm of abstractions required for mathematical development the practically rigid body is represented by the concept of rigid body. The limiting concepts of point and of coincidence of points play fundamental roles in the definition of the concept of rigid body; the characteristic property of rigid bodies is that coincidences of points of a body with corresponding points on another are preserved during a common motion, or can be restored after separation.

The theory of physical space is founded on the postulate of

Einstein that space acquires a definite meaning only as one specifies positions with respect to a body of reference. Space has been described as a receptacle which contains bodies; this characterization expresses the essential function of bodies of reference for space. Position in space is relative to a space-frame. The relational nature of space is exemplified in the reference of bodies to a space-frame in the application of geometry. The ancients chose the earth as a body of reference; by the method of surveying, the position of a plot of land was specified with respect to land marks on the surface of the earth. Euclidean metrical geometry was created to describe geometrical configurations that are at rest with respect to the earth. The human mind was liberated from its bondage to earth-space by Copernicus, who chose the sun as body of reference for the description of planetary motions. The coordinate geometry of Descartes explicitly used axes of reference which are subject to transformation, and thus the concept of a multiplicity of frames was formed. Newton founded mechanics on the concept of absolute space as a frame of reference with the property that rotation with respect to space results in characteristic phenomena. The space-frame for mechanics was relativized, however, to the extent that any frame in uniform motion with respect to absolute space was permissible for the description of motion. There remained the element of absoluteness which was based on the invariance of the geometrical properties of figures under Galilean transformations of frames of reference.

The metrical structure of space is constituted by the relations of rigid configurations in a frame of reference. For the theory of metrical structure it is postulated that the length of a rigid body is independent of position if no external forces act on it. Thus the length of a standard rod is invariant on displacements required for the operation of measurement. To the first approximation, at least, the large-scale structure of physical space is Euclidean. Classical physics was based on the principle that physical space is precisely Euclidean.

Time is a form of relatedness of events. Perception of temporal processes presents a flux of qualities which is expressed by concepts of duration, such as those of Bergson and Whitehead. Physical time, which like space is a primary concept of natural science, is an order of temporal relations of objective events. A

theory of time is expressed by the description of procedures for specifying the dates of events.

The structure of physical time is constituted by the processes of some mechanism, for example, a torsional pendulum, equal processes of which define equal intervals of time. A mechanism which introduces structure into time is called a clock; the date of an event at the place of the clock is determined from the position of an indicator of the clock simultaneous with the event. The extension of a time system through a space requires the synchronization of similar clocks by signalling or an equivalent procedure.

Classical mechanics postulated the absoluteness of space and time in the sense of identity of geometrical properties and of lapses of time for all frames of reference.

The description of electromagnetic processes with respect to moving bodies could not be accomplished in terms of the classical concepts of space and time without the employment of special hypotheses. The construction of a simplified electromagnetic theory required the creation of schemes of space and time that are relative to a body of reference which may have a uniform velocity of translation. This was the function of the special theory of relativity which was founded on postulates that assign the same value to the velocity of light in free space regardless of the motion of source or space-frame of the observer. The relation of simultaneity of two separated events then became relative to the frame of reference.

The special theory introduced relativity of space to bodies of reference. The properties of a rigid configuration relative to a frame in which it is at rest differ from those relative to a frame with respect to which the configuration is moving. The simplest example is the length of a rod which is a relation of the rod to a standard at rest at a given time in a specific frame. This relation of length changes on motion of the object-rod with respect to the frame of the standard. The magnitude of the length of a rod relative to a frame in which the rod is moving is less than the magnitude relative to a frame in which the rod is at rest. The numerical measure of length expresses the magnitude of the relation of length with respect to the frame of the standard. Differences of numerical measure express differences of relation of bodies in the physical world. Thus relativity of length to a

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body of reference is to be interpreted as relativity of a form of relatedness of bodies, that is, of physical space. Hence the absoluteness of space can not be defended, as some have attempted to do, by distinguishing between numerical measures, conceded to be relative, and real space endowed with absolute properties.

According to the theory of relativity the rate of a physical process, such as that of a clock, depends on the frame of reference. It was therefore appropriate to introduce a time system adapted to the rate of clocks in a frame in which they are at rest. The relativity of time to a frame of reference is the expression of the constitution of the structure of time by the rate of physical processes.

It has been argued that the theory of relativity merely describes the behavior of rods and clocks and, therefore, does not bear upon the nature of space and time as frames of physical reality. But the determinate structure of space and time is constituted by the properties of physical objects. A theory of space or time is a scheme of assigning coordinates on the basis of space-time coincidences of points. A theory of spatial coordinates is designed preferably so that numerical values can be assigned directly to positions from coincidence of points with points on a space-frame; a theory of temporal coordinates so that numerical values can be assigned directly to dates from simultaneity of events with the indications of a clock. In principle, however, it would be possible to apply the space and time of a selected frame to other frames, thus imposing a single theory of space and time upon physical reality. The postulate of invariance of length of a rigid rod and of the rate of a clock with respect to the frame in which these instruments are at rest would then be sacrificed. Measurements of length or time made with a rigid rod or constant clock would then have to be corrected, and thus complexities would be introduced into the expressions of physical laws. The relativist theories of space and time have been imposed jointly by the results of observations on the behavior of physical systems and an ideal of simplicity of theory.

The constancy of the velocity of light, which is characteristic of the theory of relativity and quite incomprehensible from the standpoint of classical physics, supports the interpretation of

radiation as a construct which is assigned properties suitable for the correlation of perceptions.

The relativization of space and time entails a partial loss of the objectivity of these forms. The restoration of objectivity was achieved by the formation of a four-dimensional space-time out of relative space and time. The interval between two events in space-time, which is defined in terms of coordinate differences in relative space and time, is invariant, that is, the same for all frames of reference. Space-time thus becomes the form of relatedness of objective events. In view of the circumstance that spatial and temporal properties are exhibited concurrently in perceptions of natural processes, space-time is an appropriate frame for the physical world.

Classical physics presupposed the independence of the structure of space and time from the dynamical properties of material content. The special theory of relativity likewise assigned a homogeneous structure to space-time. The general theory of relativity relativized space-time to the dynamical properties of matter. In a strong gravitational field the relations of rigid rods are no longer describable by Euclidean geometry, and the rate of clocks is dependent on the field excited by matter. A more general system of coordinates, analogous to curvilinear coordinates on a surface, is introduced in order to specify events in space-time of heterogeneous structure. The interval between events in space-time is kept invariant, but as Einstein declared, space and time have lost their last trace of objectivity.

In the earlier analysis of geometrical structure it was presupposed that rigid bodies and clocks are not disturbed by external forces. It would be possible, therefore, to explain a uniform departure of configurations of physical events from that in homogeneous space-time as the effect of a universal field of force. But then measurements of spatial and temporal coordinates with respect to a given frame of reference would be subject to correction factors which would introduce complexities in the formulations of physical laws. Assuming that the phenomena predicted by the general theory of relativity are correct, it conforms to the ideal of simplicity to formulate physical laws in terms of the coordinates of relative position and relative time which can be read off directly

from the instruments which define space and time in the given frame of reference.

The development of the concept of space-time exemplifies the formation of a concept of physical reality. After the special theory of relativity had introduced schemes of relative space and relative time, the concept of interval was formed mathematically out of spatial and temporal elements. The relation of interval between space-time events constituted the basis of a relational structure for the reference of our perceptions of physical processes. Space-time then was acknowledged as an objective form of events, superior in reality to relative spaces and times. The introduction of heterogeneous space-time in regions occupied by matter has provided a program for the definition of material properties in geometrical terms. Thus the conception of Descartes, who conceived extension to be the essence of matter, has been revived in a new form.

IV

The theory of relativity, as well as classical physics, arranged the changing states of bodies in a causal order. The concept of causality has undergone criticism in the light of new theories for the elementary constituents of physical reality.

The concept of causality expresses a form of connection of events. The primitive idea of causality expressed action by one body, the cause, upon another body which undergoes an effect. An empirical basis for the primitive concept can be found in the purposive exertion of force in action. The primitive mind personified natural agencies and attributed the actions of natural bodies to animate impulses, such as love and hate. For example, the attractive power of a lodestone was ascribed to a soul residing in it. However, in antiquity a beginning was made toward purging causality of the animist element. Observers of the heavens discovered uniformities of sequence in the motions of the heavenly bodies. Philosophers of atomism declared that natural processes are subject to necessity.

Newtonian mechanics explained changes in the state of motion of a material body in terms of the action of force. The early modern concept of mechanical causation thus united efficacy and uniformity. Hume purged causality of efficiency; he did not per-

ceive a necessary connection between cause and effect in an interaction between bodies, such as a collision of two billiard balls. Hume observed only sequences of motions that could be reproduced under the same conditions. The properties of causality, as determined by Hume, are space-time contiguity and regularity of sequence. Contiguous regularity, indeed, has provided the pattern, for the typical example of causal action is a collision of two bodies. Physicists persistently have sought to reduce action at a distance to action by contact. The theories of cognition of ancient philosophy were attempts to assimilate vision to contact. The concept of radiation as a mode of transfer of energy through space is designed to satisfy the demand for action by contact. However, regularity of sequence, or functional relation, has been acknowledged to be the essential element in causality. Regularity is the basis of prediction; Moritz Schlick declared that predictability is the essence of causality.

Science has been guided by a principle of causality according to which a specific state is always succeeded by the same sequence of states. It is an empirical generalization that this principle has been confirmed for vast realms of natural phenomena. The principle of causality has led to scientific discoveries: for example, when Becquerel observed that a photographic plate kept in the dark exhibited an unexpected spot, he sought a cause and discovered radioactivity. Planck has opposed the abandonment of the principle of causality for physics on the ground that it would cripple the incentive to research. Helmholtz declared that the principle of causality is the principle of the comprehensibility of phenomena. For, as Kant explained, a phenomenon is comprehended only if it is brought under a rule of succession. The element of soundness in the Kantian doctrine is preserved in the contemporary version of the principle of causality as a definition of state. As formulated by Philipp Frank, the principle prescribes that if a state is not succeeded by the same sequence of states, the departure from past experience is to be attributed to new factors in the initial state. For example, if colliding bodies do not manifest the phenomena expected of material bodies, one would attribute new properties, such as electric charge, to the bodies. On the theory that radiation and elementary corpuscles are constructs, the principle of causality is an instrument of construction. Whatever

the status of the principle of causality, it is decided by observation whether or not a given number of properties of observable or postulated objects are sufficient to predict the course of events.

The applicability of the principle of causality is restricted by the statistical interpretation of quantum mechanics. In classical mechanics the instantaneous state of a material body is specified by coordinates of position and momentum; a subsequent motion can be predicted from these initial values and the laws of motion. However, according to the analysis of measurements on atomic systems, position and momentum can not be determined with complete precision simultaneously, because procedures for the measurement of these quantities interfere with each other. If one of the quantities is known as determinate at the beginning of a measurement on the other, the new measurement disturbs the value of the previously determined quantity in an uncontrollable manner. Since precise specification of the initial state in classical terms is impossible, the principle of causality becomes inapplicable for the precise prediction of a motion.

The attempt has been made to preserve the principle of causality for atomic processes by questioning the experimental definition of physical concepts. It has been argued that a limitation of experience should not be extended to reality; that physical processes are determined, even though our knowledge as expressed by measures may be inexact; that a corpuscle in reality may have definite position and momentum, despite the impossibility of measuring them simultaneously with perfect precision. Such criticism presupposes that we can assign properties to physical reality apart from the behavior of bodies in experiments. But as the discussion of mass demonstrated, classical physics, as well as quantum physics, ascribed properties to bodies in terms of the results of experiments. The classical concepts were formed to describe phenomena pertaining to perceptible bodies. It is not surprising that concepts suitable for large-scale processes should be inadequate for fine-scale ones. The disturbance of a macro-physical object by the reaction of a measuring instrument could be reduced continuously, in principle, whereas on account of the finiteness of the quantum of action the disturbance of the atomic object can not be made negligible. Since the disturbance is uncontrollable, the laws of atomic processes may be limited to

statistical predictions. The limitation in the applicability of causality to atomic objects on the corpuscular interpretation, is demonstrated by the possibility of a wave interpretation of atomic phenomena.

Determinism was reestablished in the atomic realm by a redefinition of the concept of state. For the mathematical theory of the corpuscular picture there was formed a wave function with which one can calculate the probabilities of results of observation on quantities that characterize a system. The time-rate of change of this function is determined by a differential equation, and hence the sequence of functions conforms to the principle of causality. There was groping for the interpretation of the wave function. At first it was interpreted to represent a constituent wave of matter, but its dispersion in time was at variance with the required stability of elementary corpuscles. Then it was interpreted to express knowledge of the state of a system. Dirac, as well as H. Margenau, took the final step and treated the wave function as abstract symbol for the state of the system. The state of an atomic system can be specified in terms of the results of observations on a set of classically measurable quantities. According to Dirac, the fundamental laws of nature do not govern the world as it appears in our mental picture in any direct way, but instead they control a substratum of which we cannot form a mental picture without introducing irrelevancies. The corpuscular and wave pictures are analogical representations of the basic constituents of physical reality. The term substratum as used by Dirac is to be interpreted as referring to a realm of objects which can interact with measuring apparatus on observation. The new concept of state of the physical substratum meets the requirements of the principle of causality.

Indeterminism enters physical theory on account of the uncontrollable disturbance of a system during observation. The properties of a physical system are manifested in interactions; observation requires some apparatus upon which the system registers some perceptible effect, and which in turn reacts upon the object. It is necessary to draw a line between the system to be observed and the observer with his apparatus. On one side is the system whose states are determined by the laws of quantum mechanics; on the other side of the line are the apparatus attached to the space-frame, processes from apparatus to observer, and

the observer in a limited sense. Observation of the system involves: first, a registration of some effect upon an apparatus which thereby reacts upon the object; second, a perception of the effect, for example, a light spot on a screen attached to the frame of space, by the observer. Perception is of macrophysical bodies, and the processes involved therein are controlled by classical laws.

It should be emphasized that perception of large-scale objects, such as measuring apparatus, is not subject to statistical fluctuations except for ordinary accidental errors. Indeed, the very possibility of science depends on the reproducibility of perception; if the position of a pointer on a scale were read now as one, now as three, now as four, without change in the position, one could not build positive science. The concept of the object is in fact constructed on the postulate that perception is reproducible. The postulate is required that similar perceptions are to be referred to the same object. The postulate specifically required for measurement is that coincidence of point-percepts is coupled with coincidence of objective points.

The partition between the system under observation and the apparatus of measurement is the seat of the indeterminacy, for the reaction of the apparatus upon the object is uncontrollable. If an electron passes through a small opening in a screen that is rigidly attached to a space-frame of reference, a position is determined for the object that falls within specifiable limits. This determination of position involves the disturbance of momentum, which may have been known precisely prior to the observation of position. It might be thought that one could determine the momentum of the electron by calculating its change from the conservation of momentum and the momentum communicated to the screen which defines position. But this is impossible, as Bohr has shown, because the screen is rigidly attached to the space-frame which absorbs the momentum transferred to the screen. The momentum acquired by the screen can be taken into account only if the space-frame of the screen is permitted mobility with respect to a new space-frame, but then the function of the screen in specifying position would be nullified. The indeterminacy resulting from the reaction of apparatus upon the object agrees with the spectrum of results calculable by the mathematical theory.

The statement that the partition between object and instruments

of the subject is the seat of an indeterminacy must be qualified. There are observations on atomic systems the results of which can be predicted with certainty. Furthermore, if an observation yields a determinate result, immediate repetition of the observation reproduces the result. The most significant qualification is that the theory of observation in general requires correlation between the states of an object and the perceptible state of an instrument. The position of the pointer of an ammeter is coupled with the current flowing through it. The length of the thread of mercury in a thermometer is coupled with the temperature of the mercury. Ordinary perception, as we have already seen, requires correlation of the state of a percept and the properties of an object. Similarly, correlation is required for observation of atomic systems. Thus one can determine the position of an electron by permitting it to scatter a photon. The place of the scattering may not be predictable; but when the interaction occurs, the position of the electron is coupled with that of the photon which is registered on a screen. Thus perception of the effect registered on a screen is the basis for an inference to the position of the object-electron.

A quantum mechanical theory of the interaction between object and instrument, which has been worked out by J. von Neumann, demonstrates the coupling of object and instrument. Thus the result of an observation may not be predictable with certainty, but after observation the quantity of the object is coupled with a specific quantity of the instrument, so that the reading of the instrument may be interpreted as of the object. The coupling of object and apparatus has been especially stressed by Grete Hermann, who has declared that we should distinguish between causality and predictability. Quantum mechanics abandons general predictability for the results of observations on atomic systems, but preserves causality as correlation of characteristic quantities of object and instrument resulting from observation. The loss of predictability is accounted for by the relativity of the results of observation to the conditions of observation.

The theory of relativity introduced into physical theory relativity of the classical primary quantities to space-frames of reference. Quantum mechanics has added relativity of physical quantities to the context of observation.

V

The preceding analysis of physical theory has expounded concepts for the comprehension of the physical world: namely, concepts of constituents of physical reality, of the forms of space and time, and of the mode of connection between states. The new developments especially have demonstrated the relativity of physical objects to the context of observation, that is, to space-frame and apparatus. There remains for explicit consideration the problem, previously broached, of the ontological status of the physical world. This problem concerns the relation of physical objects to the data of perception through which they are known. I now raise the question whether or not the interpretation of physical theory imposes a specific theory of knowledge.

As a point of departure, one may cite the theory of dualistic realism which was presupposed by the creators of classical physics. Kant's doctrine was dualism, but he refrained from attributing properties of perceptual data to things-in-themselves. Helmholtz, a profound philosopher among scientists of the nineteenth century, declared that realism offers the simplest metaphysical explanation of the facts of perception. He interpreted perceptual data as effects of a reality the structure of which is represented by the structure of its signs. Helmholtz's point of view has been restated in contemporary discussion by Planck, who has formulated the aim of science as the cognition of an independent reality. The decision to deprive a transcendental reality of intuitive content has been strengthened by the new developments. Radiation is hypothetical in status, and has been assigned properties by the theory of relativity which are incomprehensible to thought schooled in classical mechanics. The demonstration of the analogical character of our pictures of corpuscle and wave for the representation of the constituents of physical reality support the constructional nature of the concepts of physical theory.

A monistic alternative to dualism constitutes a natural body out of the data of perception. According to Ernst Mach, a physical body is a complex of elements; according to Bertrand Russell, a series of aspects; and according to Herbert Dingle, a rational correlation of experiences. In his last book Eddington announced that he had been persuaded finally that physics is concerned with the rational correlation of experience.

The many attempts during the present century to construct a monistic realism have been stimulated in part by the belief that the interpretation of science requires an independent reality. It has been claimed that science is expressed in realist language, but the precise form of the presupposition is that scientific concepts are of bodies and their changing properties. Science, indeed, claims to be objective knowledge, but bodies as objects can be common constructs as well as independent things. Space and time are forms of relatedness of bodies and events with respect to a body of reference. Spatial and temporal relations are independent reals or constructs, in accordance with the status of the terms which they relate. Quantum theory expresses the relativity of physical systems to the context of observation, but the experimental situation in which the physical object manifests corpuscular or wave-like properties is constituted by physical apparatus which shares the reality accorded to bodies in general.

It is a thesis of the present discussion that it is desirable, and indeed possible, to expound the concepts of science in a manner that is neutral with respect to theory of knowledge. The basic concept of body essentially expresses a frame of reference for actual and possible perceptions. The term frame preserves neutrality between the concept of body as independently real, and the concept of an object of perception as a complex of percepts. The concept of frame arises in the interpretation of experience prior to conscious isolation of sensibilia, and hence one may agree with the statement of Harold Jeffreys that the physical object and the laws of physics are anterior in knowledge to sensibilia.

The doctrine of the neutrality of science with respect to epistemology requires that criteria of reality be postulated for the scientific universe of discourse. The original basis for the formation of the concept of natural body is the occurrence of perceptions which possess a vividness that is independent of volition. A body is a frame for perceptions; reproducibility of perception is the criterion for persistence of bodies. Some bodies must be acknowledged to be relatively permanent in order to provide instruments of positive knowledge. The occurrence of similarities in quality among different bodies prompts the formation by abstraction of concepts of qualities in terms of which bodies can be described. As methods of analysis become more discriminating and precise, spec-

ifications for the nature of bodies may be made more refined. While a body remains fixed in some respects, it may change in others; the changes in property are explained in terms of correlated changes in the environment. The functional relation of general properties constitutes a natural law. By application of laws the determination of one property can provide the basis for determining another property. Physical quantities essentially are properties manifested in functional relation with properties of other bodies; numerical measures of quantities are assigned from perceptions of coincidence of points in space and time. Finally, bodies, media, or processes which are not directly perceptible may be postulated, and perceptible bodies and phenomena reduced to them. These objects of a hypothetico-deductive system partake of the reality of perceptible bodies.

Our concept of physical reality is founded on the reality of bodies which are frames of reference for perceptions. Cognition starts with concepts that are qualitatively defined by correlation with the data of perception. As functional relations for a property are found, the concept thereof acquires a place in a relational structure which then determines the significance of the concept. As a concept is posited in wider and more precise schemes of representation, its significance is transformed by the new context. The progress of physical theory requires the creation of hypotheses that involve new concepts which demand interpretation. For example, during the eighteenth century there was formed the concept of quantity of heat which was defined so that heat is conserved during an exchange of heat between bodies. This concept could be used to predict the results of experiments, but its significance underwent modification. Initially heat was interpreted as a substance, but then was reduced to the disordered, mechanical energy of the corpuscles constituting bodies. C. G. Darwin has remarked that in physics new concepts are introduced by mathematical theory and then receive physical interpretation. The light waves of mathematical theory were interpreted, first as waves in an ether, and finally as electromagnetic waves. At the present time radiation is pictured analogically as corpuscles or waves. The wave function of quantum mechanics especially has presented a problem of interpretation. It was interpreted to represent a wave of matter, then a state of knowledge, and finally the state of the system. This last

step exemplifies the acknowledgment of a concept as an expression of the property of some objective system. The criterion of physical reality is that a concept, which is an integral element in a scheme of representation of events pertaining to perceptible bodies, expresses the property of a real object.

Dirac has declared that the function of physical theory is to predict the results of experiments. Perception of an ordinary natural body is the result of an experiment which is performed by placing oneself in an appropriate position and looking with eyes open. Generalizing from physical theory, I conclude that our concepts are principles for the prediction and control of the results of observation, encompassing by this expression the range from simple perception to the interpretation of indications of experimental apparatus.

The following is a survey of the content of contemporary physical theory which is available to the architect of a comprehensive theory of reality. Large-scale bodies and processes are assemblies of fine-scale constituents. The states of the constituents of the physical world are controlled by abstract quantum mechanical laws. The assemblies have properties extended in space and changing in time relative to space-frames of reference. The special theory of relativity has compounded relative space and relative time into an objective space-time. The general theory of relativity has made possible the expression of large-scale physical properties through the coefficients of a heterogeneous space-time. Observation is an intrusion into the causal unfolding of states; it couples physical objects with macrophysical apparatus. On account of the finiteness of the uncontrollable disturbance of a microphysical object of observation, our concepts which are suited to large-scale apparatus are limited in their applicability to the interpretation of atomic experiments. Accordingly, the constituents of the physical world are described analogically as corpuscles or as waves. The possible employment, in limited ways, of either a corpuscular or wave picture for the same elements of reality exhibits our concepts as principles of order for observations. The picture of physical reality as constituted of corpuscles is a model, limited in specification by indeterminacy, of a hypothetical reality beyond the range of direct experience.

The employment that may be made of these doctrines for

metaphysics depends on the status granted to the object of ordinary perception. For physical theory a natural body is a frame of perceptions. Whether perceptions are to be viewed further with dualism as the transient signs of a transcendental reality, or with neo-realism as permanently constituting an independent realm which is occasionally illuminated by consciousness, or with absolute idealism as constituting the content of an absolute experience, is to be decided by considerations which lie outside the province of physical experience.

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CURRENT STRICTURES ON REASON

I

THE present writer was installed in his Association office in the month of Pearl Harbor. More than three years later, as he sends this address to press, the war in Europe is just drawing to its close. His tenure of office has thus coincided almost exactly with the chief period of the war. It is hardly conceivable that an address written in this period, even when prepared for persons as detached and dispassionate as philosophers are supposed to be, should ignore the events of the time. Nor do I intend to ignore them. The question I propose to discuss is one that has been forced by these events upon all reflective minds. Over and over again in recent years we have had to contemplate acts that seemed to belong, not to civilization and the twentieth century, but to the days of a Neanderthal past, before law or justice or pity had begun to lift up its voice against the fist and the club. What has dismayed us is not merely the cruelty and the brutality, incredible as these have been; it is also the readiness with which great numbers of kindly and sensible people have embraced absurdities that were scarcely sane. As we have seen these things and meditated on them, we have asked ourselves whether there is sense any longer in calling man the rational animal. Have we been flattering ourselves unduly? Is that life of reason that figures so largely in the discourse of philosophers—the following of an argument where it leads, the government of feeling and action by the insights of reflective thought—a practical possibility, or is it an idle hope? In the light of the last few years, is not reason best conceived as a film stretched across the mouth of a volcano?

When I first sat down to write this paper, it looked as if this might be the answer that history would record. That was shortly before Stalingrad and El Alamein. The reasonable temper, the habit of appealing to reason, the way of life marked out by reason, was threatened by a rising tide that sought to drown out everywhere the loyalty to impartial justice and objective truth. I need not remind you of what men in high places said about the scientific spirit and the intellectual life; they have had their reward; and when one has been delivered from a nightmare, one

dislikes to sully the morning with the memory of it. Suffice it to say that we did barely make our escape, and that there is probably no one of us who, after living through these years, does not place a higher value upon those fragile and precious goods of the rational life that were then so nearly lost.

The outward battle will soon be over. But is the political threat the only threat by which the rational life is endangered? I do not think so. The power to think and act reasonably has inward as well as outward conditions, and though these conditions are hidden away from the general view, philosophers know that they are more important than the outward ones. If we are to follow an argument where it leads, there must be present conditions, physical, psychological, and logical, whose absence will black out reasonableness far more effectually than any withholding of civil right. And the fact is that the existence of these conditions is now widely denied. It is an illusion, we are told, that reason can play free of the human nature in which it is enmeshed; there are strings attached to its every move which, if closely observed, will be seen to govern its course completely. Is this true? If it is, then our power to follow reason has won its great outward battle only to find itself bound inwardly hand and foot.

II

It is this challenge to our power of being reasonable that I wish to discuss in this paper. But first what is it exactly that is questioned? What do we mean when we call a man reasonable? We mean at least this, that in his thinking and acting he shows objectivity of mind. And what is that? It means being realistic, impartial, just; seeing things as they are rather than as fears or desires would tempt one to see them. The reasonable person will suit what he thinks and what he claims to the facts. He will be ready to give up an opinion if the facts do not warrant it, and stick to the opinion in the face of inner and outer pressure if the facts require it. His claims against others and their claims against him he will view impersonally and with detachment; he will not ask more for himself than is just merely because he is he; nor will he allow himself to be put upon merely for the like reason; he bases his self-respect upon respect for the sort of justice that is itself no respecter of persons.

If such reasonableness is to be possible, two further things must be true. In the first place, there must be a set of independent facts to be grasped. It would be senseless to try to suit our opinions to the facts of a case if there were no such facts to suit them to; and if justice consisted in following our own interest or our own desire, then, as Socrates and a hundred other philosophers have shown, there is no such thing as justice at all. To be reasonable either in thought or in act requires bowing to an authority beyond ourselves, conceding that there is a truth and a right that we cannot make or unmake, to which our caprices must defer. If I have a pet theory in science and am to be reasonable about it, I must be ready to trim it, recast it, or give it up, as an impersonal logic demands; nonconformity here is not heroism but suicide. As McTaggart said, no one ever tried to break logic but logic broke him. It is the same, of course, with morals. Reasonableness in conduct implies wearing a yoke and walking a line; it implies that if you and I differ about our rights, there is an answer to our question waiting there to be found, and that we are doing what we can to find it and conform to it. To say that there is nothing right or wrong but thinking makes it so is to say that there is nothing for thinking to discover; and to say that is to deny all point in trying to be reasonable. If all our beliefs are reasonable, then none of them are.

Thus the first condition of being reasonable is that there be an independent common rule. The second condition is that this common rule should at times control the course of our thought. We must sometimes be able to say: If I thought as I did, it was because my mind was under the influence of an independent pattern, the pattern of an objective truth. This is only to say that thought, if it is to be reasonable, must be like perception when it is accurate. Suppose we look at a checker board. If there is to be any such thing as accurate perception at all, there must be, in a sense "out there", a certain number of squares related to each other in a certain way. That corresponds to our first condition. Secondly, we must be able to say, If I see them in this way, that must be because they *are* this way, because that independent order acts upon my mind and makes me see it so. If this arrangement presents itself, not because it is there, but because my mind is being pulled about by wires from within, then there is no reason to

believe that we ever do or can see accurately; if we did, it would be sheer luck. I am happily not concerned with the mechanism of seeing, but with a principle. If, when we perceive things, we never perceive them so because they are so, then perception is a cheat. Similarly in thinking, unless at times we think as we do because the real relations of things are acting upon our thought, laying it under constraint, governing its movement, then knowledge must be an illusion from first to last.

Let us proceed with these two conditions in mind. To be reasonable implies at the least that there is an objective truth and right which we can at times apprehend, and that if our thought follows a certain course, it is because it is laid under constraint by the objective pattern of things. If these conditions are granted, reasonableness is so far possible. If either is denied, it is not possible. To show either that the pattern we seem to find in things is not there, or that, although it is there, thought can never surrender itself to the control of that pattern, is to put reasonableness beyond reach.

Now it is by denying these conditions that the case against our power to be reasonable proceeds. At the present day there are three positions, each held by thinkers of eminence, and each formidably strong, any one of which would, if made out, severely limit the area of reasonableness, if not destroy it altogether. The first of these positions is that the movement of thought is explicable in terms of processes in the cortex. This view is widely held among those who describe themselves as naturalists. The second is that the movement of thought is controlled by non-rational processes within the thinker's own mind. This is an ancient theory which has been revived in recent years by the psychoanalysts. The third is that the very ideal of rationality, conceived as the following of an objective and necessary truth and right, is an illegitimate one. This is the view of the logical positivists. It is of course impossible to discuss these positions generally within the compass of one paper. But I think it will be found in each case that the limitations imposed on reason rest upon distinct and special grounds which can be isolated without difficulty. Let us look at the three positions in order.

III

The first or naturalist theory rests on facts that physical science has led us to accept as commonplaces. We are asked if we do not concede these to be facts; we admit readily that we do; and then, as we follow out the inferences from what we have conceded, it begins to appear that we have conceded also our rational birth-right. How naturally we are led on from what seems to be the most innocent facts to a conclusion that is far from innocent will perhaps be clearer if we construct a little dialogue. The physiologist interrogates us:

'When you step on a tack and feel pain, you would agree, would you not, that stepping on it is the cause of the pain?'

'Yes, of course.'

'The immediate cause?'

'No, a remote cause only. The change in the nerve ends, so I've been taught, induces an impulse which is carried to the cortex and induces a further change there. It is this change in the cortex that is the immediate cause of the pain.'

'Correct. And you would take the same view, would you, about other sensations, and about affections and emotions?—that is, that their immediate cause or condition is a cortical change?'

'Yes, there seems to be no doubt about that. It is true, isn't it, that one can produce sensation artificially by stimulating the cortex?'

'Yes, and we are even learning what precisely to do to produce different kinds of experience; we can put the brain through its paces. We can turn your world yellow by giving you *santonin*; we can increase or diminish your anger by adrenal injections; we can lift cretinism into normality by small doses of *thyroxin*; and if we reduce your body's secretion of this by about a hundredth of a grain a day, you will slide down into imbecility. It is true we haven't found out much about the cortical correlates of ideas, but I don't suppose you would doubt that they are there too?'

'No, there seems to be no escaping that. If sensations and affections are brain-conditioned, so must ideas be. One could hardly chop a mental state in two and say that half of it—sensation and feeling—is brain-conditioned, and the other half, involving the use of ideas, is a sort of will-o'-the-wisp, with no roots in the brain

at all. If some forms of consciousness are brain-conditioned, presumably all of them are.'

'Good, I'm glad you see that so clearly; we can't make an exception for ideas. Now suppose that one idea is followed by another; each of course is brain-conditioned?'

'Yes.'

'And the thought sequence is conditioned by the sequence in the brain?'

'Well, since we have agreed that each thought is brain-conditioned, the explanation why one follows the other must lie, I suppose, in the explanation why one brain state follows the other.'

'Obviously. And the reason why one brain state follows another is to be found, I suppose, in a physical law?'

'Since both are physical, that must, of course, be true.'

'Then the reason why one thought follows another is also given in physical law?'

'Yes, that seems right enough.'

'Thought, then, is under the control of physical law?'

'Yes, that does clearly follow.'

'Well, we seem to agree perfectly. If you are a philosopher, you are at least an unusually sensible one.'

I wonder if others have, as I do, a sense of doom closing in as this dialogue unfolds. The concessions do not seem extraordinary; nine out of ten natural scientists would grant them without hesitation, and, unless in a mood of unwonted suspicion, probably most philosophers too. That is just what makes this first argument so effective. You seem to be doing nothing more than conceding obvious facts and drawing obvious inferences. And yet I believe one can show, also by obvious reasoning, that this account cannot be correct, and that if it were, it would mean nothing less than disaster for our rational life.

Let us look at the matter more closely. I said a moment ago that if we are to be reasonable, we must be able to follow the argument where it leads, which means that thought must at times be governed, not by secret strings within, but by the pattern of what it knows. When we say that our thought is objective, we mean just that, that it is moving under the control of the object. Of course there are processes often called thinking that are not

so controlled; I may sit down to a geometry problem and think first of the weather, then of my dinner, and then of my headache; but that is not thinking. Thinking proper means reasoning; and reasoning means surrendering one's attention to the logic of the case, moving to one's conclusion because the evidence is seen to imply it. Success here, as the experienced know, demands a wise passiveness; the best thinking is the least free, in the sense that it is most completely laid under compulsion by the course of objective necessity. If my inference moves from step 1 to step 2, and from step 2 to step 3, that is because, when I am really thinking, the facts that 1 implies 2, and that 2 implies 3, make a difference to the course of my thought; the inference takes the line it does because it is following, and is influenced by, a line of necessity that is there before it. This is what it does, for example, when, starting from the postulates of a logical or geometric system, it spins out the theorems that follow; and the account holds equally whether the necessity linking the steps is conceived as synthetic or analytic. Indeed this is what always happens when our thinking is at its best; its course is then governed and guided by the requirements of the evidence. Our conclusions are not arrived at by leaps in the dark, then checked against the evidence, and found to hold by miracle; it is rather that, starting from the evidence, our thought moves to the conclusion it reaches because the evidence requires this, in both senses of the word; the objective entailment controls the movement of inference. If this never happens, then strictly speaking, we never reason. For if, when we pass from premise to conclusion, the premise's entailing the conclusion has nothing to do with our reaching it, then our reaching it as often as we do, indeed our reaching it at all, becomes incredible luck.

It will now be a little clearer why to explain thinking by cortical change is not to explain it, but to explain it away. The subjective process of deduction is, when really deduction, governed by an objective implication, but when one distribution of particles follows another in the brain, what we have, so far as can be seen, is not implication, but cause and effect. The sequence of brain state B upon brain state A is as little governed by any visible implication as the sequence in motion of Hume's billiard balls. I should not deny that between the brain states correlated with the steps of

inference there is more than mere conjunction; but how far this is, as we know it, from anything like implication is shown by the facts, first, that if for one of these states there had been substituted any one of a hundred others, we should have accepted the causal relation no less readily; and secondly, that between the sequence of states in the brain that serves as the correlate of a demonstrative process and that which serves as the correlate of the loosest association there is no detectable difference. Physical causality is one thing, logical necessitation another. If therefore you say that what controls the passage from A to B in inference is physical causality, you are saying that even in reasoning at its best and clearest, where we seem to see most plainly what we are doing, we are being grossly deluded. We suppose we think as we do because the evidence requires it; we now learn that this never happens. What really happens is that a sequence of distributions of material particles, or, if you prefer, of stresses and strains, or levels of energy, one connected with its successor by nothing nearer to logical necessity than the succession of waves on a beach, produces a series of mental efflorescences which turn out by some incredible chance to bear the relation, each to its follower, of ground to consequent. That this nexus among the objects of thought exercised the slightest constraint upon the course of our thinking must be set down as illusion. The fact that A is evidence for B had no influence at all in making us think of B, or in making us accept it. The purer reasoning seems to be, the deeper is the illusion, since, speaking strictly, we never reason at all.

Must we accept this view? I do not think so, and for two reasons. First, when our thinking is at its best and clearest, our certainty that it is controlled by necessity is greater than that of any physiological speculations that can be set on the other side. Take a simple train of reasoning and observe what goes on when you follow it. Two is to four as four is to what? Four is to eight as eight is to what? Eight is to sixteen as sixteen is to what? How do you manage to hit upon the answers as you move along this series? The natural reply is, Because the rule of the series logically requires that each successive proportion should be completed in just this manner. I believe that this, which is the natural account, is also the true account. There are dozens of directions in which

thought could wander off at any step in the series, and I believe that if it declines these wanderings and remains in the groove, it is because there *is* a groove, because thought is laid under constraint by the logic of the process. We not only see when we reach the end that this constraint did operate; we may be aware of the constraint as we proceed. And to my mind there is something fantastic in brushing aside such empirical evidence for the sake of a flight of physiological speculation. Some persons, to be sure, are so much in the habit of prostrating themselves before physical science that they are ready to snub their clearest insights if such science has shown itself cool to them. Let us recall, therefore, that what we are offered here is conjecture, not established fact. No competent physiologist professes to know exactly what happens in the cortex when any conscious state occurs, nor exactly how any cortical event leads on to another, nor exactly what is meant by parallelism between the two series—still less to have verified in detail any hypothesis about their relation. To set a theory at once so vague and so tentative against the clear, immediate assurance of the reasoning mind is not properly science at all, but the sort of philosophy bred by an uncritical idolatry of science.

But there remains a more cogent reason for denying that physical causation will account for the sequence of thought. The view is self-refuting. How is it arrived at? It is an inference from observed sequences of mental and bodily change. Now the inference to this conclusion has either been constrained by the evidence or not. If it has, the conclusion is refuted by the mode of its own attainment; for something more than physical causality was at work in attaining it. On the other hand, if the inference is not under such constraint, why should we respect its result? For then nothing more is at work in it than in the equally good causal processes of wool-gathering or derangement. It may be replied that, though rational and irrational processes are equally matters of physical causation, we can see by later reflection which are necessary and which are not. But this is again self-refuting. For even if I do, in a flash of later insight, see that the conclusion was required by the evidence, I do not have this insight because the necessity is objectively there, but solely because some change in my cortex has made it appear to be there. Given the physical

change, I should have 'seen' it whether it was there to see or not; and hence it is the physical change, not the presence of the necessity, that makes me think I see it. This is to make all apprehension of necessity illusory, and all attempts to prove anything vain, including this one.

It is curious that the disaster implicit in the physiological account of reasoning has been so seldom noticed. But there is one school of psychologists that has seen it and explicitly sought to deal with it, the school of Gestalt. They have said boldly that there are mental processes that cannot be explained in terms of traditional natural science; that it is futile, for example, to explain a course of reasoning in terms of habit, or conditioned reflexes, or even association and that if we complete a syllogism as we do, it is for the same reason that we complete an imperfect circle as we do, because the law of structure of what is before us makes its specific demand upon us. For this insistence, at a time when psychology is threatened with ruin by technicians without vision and without philosophy, we can only be grateful.

But their theory is now being developed in what seems to me a dubious direction. Having broken with a strong tradition of natural science by finding necessity in mental sequences, they make it up to such science by putting this necessity back into the physical realm. When we reason syllogistically, we *are* under the control of necessity, but this necessity is literally in the brain. They have argued with some cogency that when we perceive a square or a circle there is actually a field of similar structure in the cortex. They hold that when our thought is carried along the line of necessity there is a gradient of force in the cortex, a physical tension and its resolution, and that between the physical and the conscious necessity we can detect, if we look sharply, an identical 'requiredness'.

My chief difficulties with this are two: First, try as I will, I cannot see that the necessity which moves us in reasoning is the same as physical compulsion, however abstract and schematic we make their allegedly common element. What the necessity is that links premise with conclusion I do seem to see; and I also seem to see that it is something different in kind from what the physicist means when he talks about a flow of energy from higher

to lower potential. To say, then, that what moves me is really the latter is to say once more that when my thought is at its clearest I am under an illusion as to what is directing it. And I do not see how you can say that without discrediting reason generally.

Secondly, the Gestaltists would agree that between the conscious and the cortical state the parallelism is not concrete and detailed, but isomorphic merely, that is, identical only to the extent of a highly abstract and formal pattern. But is this the necessity that works in consciousness? The Gestaltists themselves have taught us that it is not. They would hold, for example, and I believe with sound and important insight, that there is a necessity in music which constrains a composer to continue a melody in one way rather than in others. This necessity is one that holds among the sounds as heard; it takes its character from the terms it relates, namely these phenomenal sounds in this concrete phenomenal field. But these sounds, as the Gestaltists agree, are not themselves cortical events. Any pattern, then, that is common to brain and consciousness would have to leave them out. But a pattern in which phenomenal sound plays no part is not the pattern that works within experience. Everything depends on which pattern is to control. To say that it is the first, the abstract isomorphic schema, is to say that what really governs the musician, the painter, the moralist, is not what he believes to govern him, but something extremely different; and this seems to me in effect to discredit our actual thought in the field of value. To say that what governs is the second pattern, the pattern that takes its character from the phenomenal sounds, is to concede control by what will never be found in the cortex.

IV

It is time to turn to the second of the contemporary theories that imperil the life of reason, a theory that to most men is more familiar and more persuasive than the first. Even if our thinking is not in servitude to non-rational forces in the body, it is still, we are told, in servitude to such forces within the mind. Man is not primarily a thinker; he is an actor, for the reason that he is still an animal, with far more animal ancestors than human clamoring in his blood. His business, and that of his forebears, has been

to fight for a foothold on the earth, first by instinct, then by cunning, then by intelligence; and of these, intelligence, the latest to arrive and not yet fully mastered, is as truly as the others a tool to ends that are selected for it and not by it. Man thinks to live; if he sometimes lives to think, that only shows that his mind, like his body, is subject to distortion. Thought sprang originally, and still springs, from practical need; it is maintained by a feeling—interest—and tested by another—satisfaction; its goal is not knowledge, for knowledge itself is only a means to survival and success. Little by little the beliefs that seemed to be the products of pure reason are being shown by subtle analysis to be the day-dreams of frightened men who need to be comforted, or compensations for defects that cannot well be admitted, or rationalizations of the plainly irrational bribes paid to the forces of unreason for letting us hug self-respect a little longer. Man likes to boast that he is a rational animal. How better disprove the claim than by pointing to the pitiful fact that at times like this he still makes it?

There are people who believe all this to have begun with Freud. It would be less formidable if it had. The truth is that it is the undercurrent of all philosophic history, a strain in minor key that can always be heard if you listen attentively, even when the trumpets of reason are sounding most confidently. At the very moment when Plato was heralding a reason that was the impartial spectator of all time and all existence, Protagoras in the same city was declaring πάντων χρημάτων μέτρον ἄνθρωπος and Callicles was teaching that the doctrine of justice was convention only. While Plotinus was saying at Alexandria that reason was the highest emanation of Deity, Tertullian, farther along the coast, was saying: *Certum est quia absurdum est, quia impossibile est*. No sooner had St. Thomas completed the edifice of his rationalism than Duns Scotus was undermining it with the doctrine that even in God the will is primary and that it manufactures truth and right in accordance with inexplicable impulse. While one great Frenchman was building rationalism into the temper of France, another was protesting: *La coeur a ses raisons que la raison ne connait pas*. Spinoza wrote a great book to show that the good life lay in progress in reasonableness; and before it was published Mandeville ap-

peared in England to preach that goodness is the offspring that flattery begets upon pride, and to hear an echo from Scotland proclaiming that reason is and must be the slave of the passions. When Hegel announced at Berlin a series of five-o'clock lectures on reason in man and the world, a young gentleman named Schopenhauer set another series at precisely the same hour to show that in both man and the world the primacy belonged, not to reason, but to blind will. While Bradley in Merton was thinking out the dialectic of the *Appearance*, Schiller just over the wall in Corpus was teaching that "our knowing is driven and guided at every step by our subjective interests and preferences, our desires, our needs, and our ends". So it goes; so apparently it has always gone. And thus if Freud and McDougall and Westermarck have been teaching, each in his own way, that belief is the puppet of feeling, it is not as if their doctrine were something new under the sun; it is only the newest form of one of the oldest protests against reason.

Before commenting on its claim to respect, I may be permitted a remark on its political relevance. No doubt the tidal wave that has been threatening in these last years to wash us and our studies into the discard is inspired by no one philosophy, if indeed it has been tintured by philosophy at all. But there are those who, to the amazement of some of us, have sought to link this movement in spirit to those who have made most of reason. The thinkers of the great tradition have held that our thought, if it was to be reasonable, must bow to a logic the same for all of us, absolute in its requirements, and independent of desire; some of them have gone on and said that in such a logic we had the key to a world which, if we knew it fully, would be found intelligible through and through. This view is called at times absolutism. Perhaps for that reason some persons have professed to find in it the seeds of political absolutism. To set up logic as a final authority; what is that but authoritarianism? To bow to a truth that exacts recognition regardless of our desires—is not that surrendering liberty to a metaphysical Moloch? A member of this Association appealed some years ago for a view in which, to use his own words, "logic ceases to be a bully, and makes an appeal to our better instincts". The argument seems to be that rationalism is a kind of authori-

tarianism, that Fascism is also authoritarianism, and that the two are therefore somehow the same thing.

On the virtuosity of this performance as an argument I shall not comment. What is important is that its conclusion is worse than untrue; it is the very opposite of the truth. The authoritarianism of reason is about as congenial to Nazism as an eleven-ton bomb; if it is brought home to it at all, it proves shattering. Once allegiance to a common reason is admitted, the whole sombre structure of Nazi notions, the notion of 'thinking with one's blood', of an Aryan or a Semitic truth or duty or privilege, of right as made out by might, and all the jerry-built adjuncts of other irrational rights—the right to destroy individual freedom, to claim for oneself or one's people what is not conceded to others, to enslave and gag and exterminate—all this is recognized as the hideous nightmare that it was. It is no wonder that Fascism in all its homes and forms found it expedient to stop the mouths of the philosophers. For Fascism stands for self-assertion, and reason for self-criticism. Fascism loves force, and to reason the appeal to force must always remain irrelevant and stupid. Fascism insists on what divides men; reason is cosmopolitan. Fascism hates the intellect, and with a sound instinct fears it; for in reason it recognizes, and knows that the world recognizes, the deadliest of its enemies, an authority in which there is no authoritarianism, an absolutism that does not tyrannize, a master, and indeed the only master, in whose service there is freedom.

But to return to the argument: thought, we are told, is under constraint from within. It reflects, not the outward pattern of things, but our hidden loves and hates, desires and fears. In *The Future of an Illusion* Freud explained religious belief as due to the persistence of the infantile need for a father. According to Westermarck, what is expressed by our moral judgments is no character in the act, but our emotional attractions and repulsions. In a recent book a distinguished psychologist, Professor Holt, has written: "The entire history of philosophy is little else than a tiresome and futile series of pictures in which each philosopher has imagined what he most yearned to have in his own 'best of all possible worlds'. This", he adds, "is levity". Such skepticism about reason, though anything but new, has perhaps never been

more popular and more formidably supported than in recent years. What are we to say of it?

The first thing that we must say of it is a commonplace. It is that if the argument is pushed through and made general, nothing further is called for; like so many other attacks on reason, it disposes of itself. If it is true that we are always governed by non-rational pulls; then of course our conclusion that we are so governed is also produced by non-rational pulls. But if it is, why should it have more respect than any of the other illusions produced by such pulls? Surely the attempt to prove by rational processes that rational processes are irrational is the last irrationality.

Perhaps the reply will be made: 'I admit the inference; and hence I offer my theory only as one that expresses and satisfies my own feeling, and may turn out to have the advantage of rival theories in better expressing the feeling of others also.' But the reply will not do. First, to say, 'I admit the inference' is to say, 'I accept it because I see that it follows', and to say that is already to have abandoned the view that beliefs *need* be governed irrationally, since this one is not. Secondly, the theory is plainly not offered merely as something that pleases its maker; it is offered as true, as conforming to fact, and because it does so conform, as sounder than rival theories. If it is not so offered, why offer it? If it is, then the offer is inconsistent with the theory offered, for it offers as governed by fact the theory that, owing to subjective pulls, our theories are *never* governed by fact. And thirdly, when anyone says he is content to have his theory take its chances with other theories, it is hard to believe that he is really proposing to test it by its appeal to popular feeling. He is saying that as people come to know the facts better, they will see that these facts exclude the other theories and require his own. That implies that the minds to whom he takes his appeal are not puppets of feeling, but are to this extent reflectors of fact.

The truth is that in this generalized form the theory does not make sense. It says that our thought is inevitably distorted by feeling, and it is ready to say pretty precisely, as Freud does in discussing religion, where thought goes off the rails. Now you cannot recognize that another has gone off the rails unless you know what it means to stay on them. If Freud can point to the mote in

other people's religious vision, it is because he is confident he has cast out the beam from his own. He is sure that in the main he is thinking straight when he thinks about religion and about the crookedness of most people's thought about it. What he has proved, then, is not that thinking straight is impossible—a proof that could not get under way without assuming the falsity of its conclusion—but only that thinking straight is hard, which we knew before. To say that we can never think straight is to expose oneself to that charge of fatuity which has now stood for some thousands of years against the sort of person who rises to remark that he knows he knows nothing.

I am of course not offering these few comments as an appraisal of the work that has been done by the students of man's irrationality. We owe them a great debt. McDougall has said that Freud threw more new light on the workings of the mind than any other psychologist since Aristotle, and I should not care to deny that he is right. All I am concerned to deny is the conclusion often drawn from these researches, that the mind is so controlled by pulls from within that it is never under the control of the objective pattern of things, or follows the thread of an impersonal logic. The remarks I have offered, slender as they admittedly are, do seem to me to settle that point in principle.

V

We now come to the third of the current criticisms of reason. It is a peculiarly formidable criticism, because it comes not only from within the camp of the philosophers, but from a part of that camp in which clearness and accuracy are cultivated with laudable care. The attack is formidable, again, because it calls in question the very end and goal of reason as we have described it. That end is to understand, and to understand is always to follow an objective pattern or order. What kind of order is this? If it is to satisfy reason, it must be an intelligible order, and what is that? It is an order that never meets our question *Why?* with a final rebuff, one in which there is always an answer to be found, whether in fact we find it or not. And what sort of answer would satisfy that question? Only an answer in terms of necessity, and ultimately of logical necessity, since of any answer that falls short of this the ques-

tion Why? can be raised again. When we reach an answer that is necessary, we see that to repeat the question is idle. Of any statement of merely causal necessity, such as the law of gravitation, or Ohm's law, or Boyle's law, we can intelligibly ask why things should behave in this manner. But when we see that things equal to the same thing are equal to each other, we cannot sensibly ask why, because we are at the end of the line to which such questioning can take us. We have already reached the logically necessary.

Now if the world is to be the sort of world in which reason could even in theory reach its end, it must be one in which intelligence finds an answering intelligibility. I see no way in which it can assure itself beforehand that this is what it will find; I only wish I did. It may be that when we ask such questions as Why does the sun attract the earth in accordance with the law of inverse squares?, we are asking a question to which no answer that satisfies reason will ever be forthcoming, and this not because the answer is beyond our reach, but because there is no answer, because the connections of things and events are non-necessary, and therefore in one sense non-rational and unintelligible. If this is true, the attempt to understand is doomed to defeat from the outset. But I see no way of proving this either.

Here is where logical positivism comes in. It claims to have evidence that in entering upon such a program reason is bound to fail. The argument is as follows. Thought must live and move among propositions, for it is intent upon grasping what is true, and only propositions are capable of truth. Since the material with which it directly deals is thus always propositions, a review of the kinds of proposition open to it will throw light on what we may expect of it.

Now when we review the possible kinds of proposition, we find that they are all reducible to two. On the one hand are necessary propositions, such as those of logic and mathematics. Because of their necessity, they have always given delight to the rationalistically inclined. But unfortunately they are all tautologies; they unfold our own meanings only and give no knowledge of the actual world. On the other hand there are empirical propositions: this is a table; American robins have red breasts. These do assert of the actual world and, if they are true, tell us something about it. But

then they are never necessary; they never report that *S must be P* but only that *SP* is the case. And if the positivists are right that these two are the only kinds of proposition that ever present themselves to thought, then the program of reason as we have conceived it is clearly impracticable. That program was to penetrate through into the intelligible structure of things. This we now see that we can never do. For though we can indeed know necessities, these necessities are never links that join actual facts; and though we can know facts, these are never necessary. The world of existence is unintelligible.

The positivist case against our program thus rests on two contentions; that all necessary propositions are tautologous, and that all factual propositions are contingent. It is important to see more precisely what these mean.

It may be supposed that the first contention, all necessary propositions are tautologous, means what Kant meant when he said that analytic propositions were tautologous. These, he said, merely set out in the predicate what is already contained in the subject. Positivists reject this account of tautology as resting on psychological grounds; it places the test, they say, in subjective intension, in the accident of how one happens to conceive of the subject named. The test they offer instead is whether the proposition in question can be denied without self-contradiction; it is necessary if it cannot. Now they admit that there are large numbers of propositions which are in this sense necessary; and if so, why should we take offense or alarm at their theory? Do not all these necessities stand for just so many intelligibilities in the nature of things, and are not these precisely what we are seeking?

Unhappily, the positivists will not let us read them in this way. They insist that the necessity here exhibited has nothing to do with the nature of things, that the contradiction involved in its denial means incoherence, not in nature, but in our own linguistic usage. Necessary propositions, writes Mr. Ayer "simply record our determination to use words in a certain fashion. We cannot deny them without infringing the conventions which are presupposed by our very denial, and so falling into self-contradiction. And this is the sole ground of their necessity".¹ A necessary

¹ *Language, Truth and Logic*, 114.

proposition of the form 'S is P' tells how we propose to use S. A necessary proposition of the form 'P implies Q' illustrates a definition of implication which has been adopted arbitrarily, and which stands, not for a nexus in nature, but for a convention of our own. Let us look at these two types.

A necessary proposition of the form S is P, which in former days would have been said to state a necessary relation between concepts, is now said to state how we use, or propose to use, S. I think that what this amounts to, after all, is that such propositions are analytic in Kant's sense; the predicate sets forth, in part or in whole, how one conceives of the subject; the addition to the older theory is that this predicate is arbitrary. Regarding this doctrine I should hold as follows: (1) the view that all propositions of this form are analytic is untrue, and (2) the addendum that the predicate is arbitrary is equally untrue.

(1) 'Whatever is red is extended'. This seems to me a necessary proposition, and most positivists would, I think, agree. By saying this they mean that its contradictory would be self-contradictory. Why would this be true? Because in our first proposition we merely set forth in our predicate part of what was meant by our subject. This analysis seems to me incorrect. What I mean by extension is not what I mean by redness, nor is it part of this; the two are quite distinct. If when I think of a billiard ball as red, the extension of that red is part of what I mean by red, then when I think of another billiard ball as white, the extension of the white will be part of what I mean by calling it white; and I shall then have to say that the balls are similarly colored, which is absurd. Being extended is, to be sure, so intimately connected with being red that if a thing is red it must be extended also; the one entails the other. But surely that is the way to put it. It is quite incorrect to say that when I call a thing extended I am defining the meaning of red. Though I am asserting a relation of entailment or necessity, it is evident from inspection that that relation is not one of identity, either in whole or in part. And if so, necessities are not always tautologies. I should myself maintain that in actual thought they never are, but that is another point.

(2) To the contention that such propositions are analytic, the positivists add, as we have seen, that they are arbitrary, in the

sense that they state or illustrate a convention which might have been different. Mr. Ayer writes as follows: "if I say, 'Nothing can be coloured in different ways at the same time with respect to the same part of itself', I am not saying anything about the properties of any actual thing . . . I am expressing an analytic proposition, which records our determination to call a colour expanse which differs in quality from a neighbouring colour expanse a different part of a given thing. In other words, I am simply calling attention to the implications of a certain linguistic usage".² Now I suggest that when we call two differently colored patches of a rug different it is because we see that they are and must be different, and that this, which we mean to assert, is wholly independent of linguistic usage. If it were really a matter of usage, the adoption of a different usage would make a difference to what I assert. Would it in fact? Suppose we decided that when we saw two differently colored patches we should henceforth call them the same patch; would that which we meant to assert be different from what we meant to assert before? I think not. We should still be asserting the parts to be different, because we see that they must be, and if we used the word 'same', it would now mean what we meant by 'different'. The fact is—to repeat—that we call two differently colored parts different because we see that they are so, and must be; they are not so, nor are they seen to be so, because we have adopted the convention of calling them so. Language adjusts itself to the observed nature of things; the nature of things does not wait on our language. These are truisms that I am almost ashamed to set down deliberately. And yet when we are offered statements of the kind I have quoted as the final result of exact linguistic researches, a few truisms may come as a relief.

I have been dealing with necessary propositions of the S-P form, that is, propositions which assert a connection between subject and predicate. I come now to assertions of the P-implies-Q type, which assert a necessary linkage between propositions themselves. The positivists treat these in essentially the same way as the others. They would argue as follows: when we assert that a proposition P implies another, Q, we are, in the first place, assert-

² *Op. cit.*, 104.

ing what we have asserted already, and in the second place, asserting a relation to hold that belongs, not to the nature of things, but to our own set of conventions. As for the first point, when we say that P implies Q , we find that we always know, or think we know, certain things about the truth of P and Q . Of the four possibilities—both true, both false, P false and Q true, P true and Q false—we know that one or other of the first three holds. But in knowing that, we know already that P implies Q , for that is what the statement *means*. At least that is what it means to us. For, secondly, say the positivists, you are at perfect liberty to mean by it something else if you wish. You may mean by it what, following the *Principia*, we have just offered, *i.e.*, either P is false or Q is true, or what Mr. Lewis means by it, that P 's truth is inconsistent with Q 's falsity, or any one of a large number of other things. Which of these you choose is not determined for you but by you; it is a matter of convention. All that is required is that once you choose your conventions, you stick to them, that once you have defined implication in a given way, you mean this by it consistently; otherwise you stultify yourself.

Now the first of these points, that implication is tautologous, depends on the second, that it is a matter of convention; for, in the position we are examining, what implication shall be is conventionally determined. The question before us, then, is whether it is so determined.

It seems to me that there is one very simple argument which shows that it is not. This argument is that of all the various definitions which are offered of implication, we can sensibly ask, Does this give what I really mean or not? We can not only sensibly ask that question; we can see that the various answers miss or approach what we mean in various degrees. Thus we can see that the Russell-Whitehead formula of material implication misses what we mean by a very wide margin, and that Lewis's strict implication approximates it much more closely. This shows that we have something in mind to which all the conventions must come for testing, a relation conceived as holding independently of our usages and conventions. When we say that the premises of a syllogism imply its conclusion, or that being extended implies being divisible, we do mean something definite, however difficult to hit with words;

and this is what gives the target at which our definitions aim. If there were no target there at all, how could we tell, as in fact we can, that some definitions strike close to the mark and others go wide of it? Of course our definitions are arbitrary in the sense that to the word 'implication' we can attach any sense we want. But to argue from this that any sense we attach to the word will equally fit what in common use we mean by it is surely confusion. When we dispute over the nature of 'justice' or 'number' or 'truth', are we really free to define the term as we please? Do we not assume on both sides that we are trying to run down and capture the same thing? When we argue with each other as to whether an inference is to be admitted, is there no bar, in the form of a common understanding of what 'follows' really means, to which both of us must take our appeal? If there is not, argument is futile. If there is, positivism is wrong.

This consideration is to my mind decisive, and those who hold logic to be conventional have not, I think, wholly escaped it. It is true that from differing definitions of 'P implies Q' there follow 'alternative logics', in the sense of differing sets of basic logical propositions. If, for example, one defines this, not as meaning 'material implication' (either 'P and Q', or 'not-P and Q', or 'not-P and not-Q') but as meaning 'either "P and not-Q" or "not-P and Q" or "not-P and not-Q"', a sort of logic would follow in which a true proposition implies and is implied only by a false one. But so far as I can see, when one says that this follows, one means by 'follows' what all the rest of us mean by it. The concept of following is common to all the alternative logics; to that there is apparently no alternative. Again, in a two or three valued logic, implication is commonly defined by the matrix method; for example, if P and Q may have either of the values 'true' and 'false', and no others, then there are only four combinations possible from which to compound the definition. Now when it is said that these are the only four possible, is this too a convention to which an alternative is possible? I cannot think this is meant. Once more, if logic is wholly conventional, there should be logics in which the principle of contradiction is replaced by an alternative. So far as I know, there are none such; without this principle the sort of distinction required by all logics in common would be

impossible. But a convention that is necessary to make all other conventions possible is not in the same sense a convention itself.

I have been dealing so far with the first position of the positivists, which would make all necessary assertions mere statements about usage. It may be asked, If not about this what else? You would not hold, would you, that they are statements about the actual world? I answer, Of course I would. 'That apple yonder cannot, in the same part and under the same conditions, be colored in different ways.' I believe that when we say that, we are saying something about the apple. 'X cannot at once have Y and not have it.' The positivists take this as meaning, 'I do not propose to *call* both that which has Y and that which hasn't by the name of X.' Bradley takes it as meaning that nothing that is real is self-contradictory. Which is right? Of course if one says, as positivists do, that all assertions except those about usage are assertions about sense experiences, Bradley is talking nonsense. There is no space here to discuss this curious and interesting revival of sensationalism. All I can say is that after an inspection of my own meaning, I wish to make it clear that I am talking Bradley's kind of nonsense.

We turn now to the second position of the positivists, which must be dealt with in the briefest way: All factual propositions are contingent. What are we to say of it? I think that even if factual propositions are defined in the strictest positivist fashion, the statement must be set down as untrue. Before us, for example, is a series of colors arranged in order of their affinities. We perceive that in this series, orange falls, and must fall, between red and yellow. Is this an assertion about elements given in sense? Yes, and it is therefore a factual assertion. Is it a contingent assertion? No. Things are related contingently when they might be related otherwise than they are. But the relation I am here asserting could not be other than it is; if orange were not related as it is to red and yellow, it would not be orange. The Gestaltists tell us that when we 'see', as we often do, that to continue a melody in the right key we must proceed thus and not thus, we are laying hold of a genuine requiredness; and I think they are right. Here again the *must* holds among the given sensory elements; the insight is at once factual and necessary. And if one breaks with the

narrowly sensory interpretation of 'factual', as one should, many other types of factual necessity are admitted. When I say that my present toothache is bad, am I saying that the badness is accidentally conjoined to it, so that the pain could be what it is without the badness? Clearly not; I am asserting a predicate that belongs to its subject necessarily, though that subject is an existent. When I say 'I cannot doubt that I am now conscious', I am reporting that a present fact excludes, and necessarily excludes, a predicate suggested of it. Personally I should be ready to maintain, in respect to each of the positivist positions, not only that it is false, but that the truth lies in its contrary. I think that in the end all necessary propositions must be taken to assert of existence and that no factual propositions are altogether contingent.

But it is no part of my design to argue for these positions. My present interest has been sharply limited; it has been merely to help clear the ground. But that in itself is important. For if any one of the theories I have discussed is true, philosophy has no future, except perhaps 'the future of an illusion'. If our reasoning is in truth the shadow cast by the irrational displacements of matter, if it is only the bobbing of corks on the surface, pulled about from irrational depths, if it is really a play with syntax, signifying nothing, then we should face the truth and, as Cromwell said to the cleric, we should 'cease our fooling'. On the other hand, if these things are not true, as I have sought to maintain, then we should clear them out of our way and get on with our work. For that work, as the greatest philosophers have conceived and practised it, namely as an attempt to understand the world, is far too significant and exhilarating an adventure to miss. That we shall ever carry it through to the end, that we shall actually succeed in following the track of necessity across the wastes that now seem trackless, I find it hard to believe, nor do I think they believed it. But they were animated by a faith which made the adventure momentous; they believed that the track was there and that they were free to follow where it led. I think that faith should be ours.

BRAND BLANSHARD

YALE UNIVERSITY

PROCEEDINGS OF THE AMERICAN PHILOSOPHICAL
ASSOCIATION OF 1944—MAY 1, 1945

EIGHTEENTH ANNUAL REPORT OF THE
BOARD OF OFFICERS

American Council of Learned Societies

Since our last report two annual meetings of the American Council of Learned Societies have been held: on January 27 and 28, 1944, at the Westchester Country Club at Rye, New York; and on January 25 and 26, 1945, at the House of the American Academy of Arts and Sciences in Boston, Massachusetts. The American Philosophical Association was represented at both meetings by the undersigned as its two delegates, and at the former meeting also by the Secretary of its National Board, Professor Cornelius Krusé. On the latter occasion the Council celebrated the twenty-fifth anniversary of its founding.

The activities of the Council during the years 1943-44 have been numerous and varied. The American Folklore Society was admitted to representation, raising to twenty-four the number of constituent societies. The Intensive Language Program has continued to be a center of very great activity. This program has become a focal point toward which not only governmental but other agencies turn for linguistic information, counsel, and guidance. Of especial interest also are the activities of the Committee on Protection of Cultural Treasures in War Areas, which has produced some four hundred regional and city maps for the use of our Armed Forces in Europe and the Near East. Similar maps are now being prepared for the use of our forces in the Pacific theater. The supplemental volume (Vol. XXI) of the *Dictionary of American Biography* was published in 1944. Volume III of the *Linguistic Atlas of New England* has appeared since our last report. The Council's work in microcopying manuscripts in English depositories has been continued, though at a somewhat slower pace because of conditions due to the war. Under the direction of Mr. Mortimer Graves a project is now under way for the translation and publication of selected scholarly and scientific works originally published in Russian. Plans also are being completed for the preparation of a five-volume history of the impact of the war on American life. Material is being collected for a critical history of the cultural projects of the W.P.A. There is under consideration also a project for a cooperative History of Science in America under the general editorship of Professor Richard H. Shryock.

Among the grants-in-aid awarded by the Council since our last report are: (1) a grant to assist in the preparation of Volume VI of the *Library of Living Philosophers*; (2) a grant to Professor Charles W. Morris for research in the general theory of signs; and (3) a subvention for the publication of Professor Charles L. Stevenson's *Ethics and Language*.

The attention of our members is called to the fact that the Council is able to offer a limited number of grants-in-aid of research, and also awards a small number of fellowships and study-aids intended to assist younger American scholars to complete or supplement their training in the humanistic

disciplines. Applications for these research grants and study-aids should be addressed to the Secretary for Fellowships and Grants, American Council of Learned Societies, 1219 Sixteenth Street, N.W., Washington, D.C.

C. J. DUCASSE

GLENN R. MORROW

Committees

Permanent Committee on Bibliography

During 1944, the Committee's activities have consisted in answering a few requests from individuals for bibliographical information, some of which were referred to Mr. Emerson Buchanan, of the Columbia University Library; also, in supplying certain lists of books. In March, a request was received from the American Library Association Board on International Relations for a list of books that would be recommended by this committee as a fitting and proper representation of the research and scholarly production in the field of philosophy since the beginning of 1939, with a view to possible eventual distribution to libraries in war areas after liberation. This proved to be a considerable undertaking and the list finally produced contained a large number of titles. For the major part of the work involved the Committee relied on the willing and efficient aid of Mr. Buchanan. A number of libraries, which have happened to hear of the existence of this list, have since sent in requests for copies of it.

In June the Secretary of the National Board of Officers of the Association requested the Committee to prepare a list of 30 of the most important books on philosophy by Americans since 1890; this list to serve as guide to the Cultural Relations Division of the State Department in such attempts as it might wish and be able to make to improve the representation of American philosophy in the libraries of the *Institutos Culturales* of the various Latin American countries. The several members of the Committee, as well as others outside the Committee, were asked to list, in order of importance, the 30 books they believed should be included. The Committee then collated these various lists, and on the basis of frequency of mention and of suggested ranking, prepared a final list. In October the Secretary of the National Board requested from the Committee, and was furnished, a list of American periodicals in philosophy broadly conceived.

The Committee has recently received word that Professor Ake Petzell of Lund, Sweden, Vice-President of the *Institut International de Collaboration Philosophique*, is taking steps to revive the *Bibliographie de Philosophie*, which due to the war, had terminated after the publication of the fourth issue. The Committee will lend Dr. Petzell whatever cooperation will lie in its power.

For the Committee,

C. J. DUCASSE, *Chairman*

Publication Committee

Professor Gregory D. Walcott, General Editor of the *Source Books in the History of Science* has sent in the following report on his series:

Not much progress can be recorded for this project during the past year, partly in consequence of the war and partly because of ill health. The publi-

cation of the manuscript, already completed by Cohen and Drabkin, for a *Source Book in Greek Science* has been definitely abandoned until the end of the armed conflict. Professor C. E. Allen, who has undertaken to prepare the manuscript for a *Source Book in Botany*, was seriously ill last year, part of the time in a hospital, and reported that he had made but little progress, although he hopes to accomplish considerably more during the next twelve months. Professor W. M. Smallwood, who took over the task of developing the manuscript for a *Source Book in Zoology*, had to cease all work along that line because of critical illness. Another competent man will be approached as soon as war-time conditions warrant that step. Dr. Hewitt G. Fletcher, Jr., who has charge of preparing the manuscript for a *Source Book in Chemistry*, has recently written that he has been relieved of his teaching engagement at the Massachusetts Institute of Technology so as to devote himself entirely to research. He added, however, that the work is well along and that he will continue his task as soon as conditions make that possible. Apparently marking time is nearly all that can be done until the war clouds lift.

At the beginning of the year 1944 two manuscripts were under consideration by the Committee. Only one additional manuscript came to us during the year. Of these three manuscripts, one is still under consideration by our committee, while the other two were found worthy of a recommendation to the American Council of Learned Societies for grants in aid of publication. A grant has been awarded by the Council for the publication of one of these; namely, Professor Stevenson's *Ethics and Language*, which was brought out late in 1944 by the Yale University Press.

The pronounced decrease in the number of manuscripts submitted to our committee during the past year brings sharply to our attention the effect of the war upon productive scholarship. While the funds at the disposal of the American Council of Learned Societies for grants in aid of publication have been much reduced, yet awards are still being made, and it is hoped that more of our members will be in a position to take advantage of the financial aid which the Council is able to give to scholarly publication in our field.

For the Committee,

GLENN R. MORROW, *Chairman*

Carus Lectures

The seventh series of Carus Lectures are to be given by Professor C. I. Lewis of Harvard University. When accepting this responsibility Professor Lewis stated that his lectures would be selected portions of a study whose major thesis is that valuations are a form of empirical knowledge and which he proposes to develop in the form of three "Books" entitled "Meaning and the Analytic," "Empirical Knowledge" and "Valuation." The lectures are to be delivered at a time and on an occasion to be determined by the Board of Officers of the American Philosophical Association and publication by the Open Court Publishing Company is to follow shortly thereafter.

EDWARD L. SCHAUB, *Chairman*

Commission on the Function of Philosophy in Liberal Education

*Report of the Secretary-Treasurer
of the
Commission on the Function of Philosophy
in Liberal Education
to
the Secretary of
The National Board of Officers
of the American Philosophical Association*

Introduction

The Commission has concluded its inquiry and is presenting some results of its work in two publications. *From the Commission's Mailbag*, issued in May 1945 by the *Philosophical Review*, is a collection of selected letters revealing something of the state of opinion in the country regarding the various questions that have been raised about the function of philosophy. The material of this brochure was edited and commented on by Brand Blanshard. The second publication is a book, *Philosophy in American Education: Its Tasks and Opportunities*, which has been written by the members of the Commission and is being published by Harper and Brothers. The contents of this book are as follows:

*Part I**The Contemporary Situation*

Chapter I, The Climate of Opinion, Brand Blanshard.

Chapter II, The Situation in American Philosophy, Arthur E. Murphy.

*Part II**The Task of Philosophy*

Chapter III, The Professional Philosopher, Arthur E. Murphy.

Chapter IV, The Opportunity of Philosophy, Brand Blanshard.

Chapter V, The Colleges, Liberal Education, and Philosophy, Curt J. Ducasse.

Chapter VI, Professional Philosophy and the Public, Max C. Otto.

Chapter VII, Aspects of the Role of Philosophy in Civilization, Charles W. Hendel.

*Part III**The Teaching of Philosophy—Things That Can Be Done*

Introductory, Curt J. Ducasse and Charles W. Hendel.

Chapter VIII, Philosophy in General Education, Curt J. Ducasse.

Chapter IX, The Basic Courses in Philosophy:

1. The History of Philosophy, Charles W. Hendel.
2. Ethics, Brand Blanshard.
3. Logic, Curt J. Ducasse.
4. Metaphysics, Brand Blanshard and Curt J. Ducasse.

Chapter X, Special Courses and Programs of Study, Arthur E. Murphy.

1. The humanities.
2. The social studies.
3. The natural sciences.
4. Education.
5. Religion.
6. The study of foreign cultures.

Chapter XI, The Teachers of Philosophy and the Graduate School, Charles W. Hendel.

Chapter XII, Philosophy in the Community, Max C. Otto.

Epilogue, Max C. Otto.

Copies of these publications are being sent to officers of the Association as well as to those who aided or contributed in some direct way to the production of these two works.

Although the investigations of the Commission have been brought to an end, there is still a piece of unfinished business which should be completed before the Commission will have fully discharged its duties. What still remains to be done will be indicated later in Part IV.

The present statement is a factual and historical report concerning the formation and the activities of the Commission. It is made at the instance of the Secretary of the National Board of Officers who has pointed out the need of a record of this sort for the archives of the Association. If similar inquiries are contemplated in the future, those who are charged with them may derive some help from a plain record of our experience in this case. One of the interesting discoveries of the present inquiry has been that of finding independent committees of the several divisions of the Association actively engaged in the study of one or more of the questions with which we have been concerned. We took care to ascertain what had been done or what is being contemplated by those bodies. It is well, therefore, as the Secretary of the Board suggests, to have accurate records of fact and procedure in matters of this sort on file. They can aid greatly any future inquirers, if only by showing some of the practical ways and means that have been tried and found useful.

This present report will contain the names of all, with the exception of one hundred and twenty members of our Association, who offered their views by letter or in conference with the Commission. It furnishes an opportunity to make a public acknowledgment of our indebtedness to all both for what they contributed in the form of ideas and for their good will, encouragement or enthusiasm. Many special acknowledgments are made, of course, in the two above-mentioned publications, but since everyone who participated in any way has some share in the work, the debt of the Commission should be here expressed to them all individually.

I

The Forming of the Commission

Out of private conferences with Dr. David H. Stevens, Director of the Humanities of the Rockefeller Foundation, the suggestion came, early in November 1942, that an inquiry be made into the function of philosophy in liberal education. The suggestion was communicated at once to the Secre-

tary of the Eastern Division of the American Philosophical Association for the information of the officers of the Division. The project was regarded, of course, as of nation-wide significance and so the matter was referred to the Secretary of the National Board of Officers of the Association, Cornelius Krusé. That Board consulted with and gained the approval of the several Divisions, through their officers, for the appointment of a Commission to make the inquiry. On March 5, 1943, application was made to the Rockefeller Foundation for a grant of \$10,000.00. The grant was made April 8, 1943.¹ Thereupon the Board decided to obtain nominations for membership on the Commission in the most democratic way by asking all members of the Association to name ten men deemed qualified for such appointment. In each Division a panel was formed of the ten most frequently mentioned for appointment and the three divisional reports were finally considered by the Board as constituting a panel from which to make a choice. The officers of the Board then balloted on the five persons to be appointed and decided by majority vote. They then appointed the following: Brand Blanshard, Curt J. Ducasse, Charles W. Hendel, Arthur E. Murphy, Max C. Otto.

The Board voted also for the Chairman, naming Arthur E. Murphy. Subsequently, when the Commission was convened by its Chairman it appointed Charles W. Hendel Secretary and Treasurer.

II

The Conducting of the Inquiry

The Commission met first on August 8-9, 1943, at the Hotel Roosevelt, New York City. It made plans to take testimony from everyone interested and to hold regional conferences at appropriate centers in the Northeast, East, West and South.

A. *Testimony Received by Letter or Report.* A letter was sent individually to every member of the American Philosophical Association, to foreign scholars of all nationalities in the country of whom we had any record, and to a few British scholars who formerly lived and worked here. This letter was also published in the following philosophical journals: *Ethics*; *Journal of Philosophy*; *Journal of Philosophy and Phenomenological Research*; *Philosophical Review*; *The Journal of Symbolic Logic*; *Journal of the Association of American Colleges*; *Journal of Higher Education*; *Journal of the History of Ideas*; *Journal of Religion*; *Studies in Philosophy and Social Science*; *American Scholar*.

The letter follows:

The American Philosophical Association has received a grant from the Rockefeller Foundation for a Commission on the Function of Philosophy in Liberal Education. The task of the Commission is "to re-examine

¹ The twenty-one letters exchanged by Charles W. Hendel and the officers of the Eastern Division, Brand Blanshard, *President*; Maurice Mandelbaum and Howard B. Jefferson, *Secretaries*; and with Cornelius Krusé, *Secretary of the Board*, and Arthur E. Murphy, *acting Secretary*; and the correspondence with Dr. David H. Stevens have been placed on file with the Secretary of the Association.

thoroughly the nature and function of philosophy in higher education and in general culture, and to study ways and means of reorganizing the teaching of philosophy in order to make the contribution of philosophy to the post-war world most effective." The Board of Officers of the Association selected for membership on the Commission the persons whose names appear on the letterhead.

In the terms of the grant liberal education is conceived very broadly. It includes not only education in college and university but also the development of a free and reflective life in the community at large. Thus the work of the Commission is to inquire into the general function of philosophy in the life of the individual and society.

The Commission can best perform so extensive and important a task if it is able to marshal to its aid the combined wisdom of all concerned. We are therefore seeking the views of scholars and teachers, and taking testimony from the various schools of thought. We plan to hold a number of meetings in different parts of the country where not only members of the profession but also others from different walks of life may discuss what philosophy means at present to the community and what it should mean, especially in the days to come. We shall thus consider both the needs of the plain man and citizen and the demands of scholarship. The Commission will bring together the results of all these consultations into reports that should yield a clearer view of the objectives of philosophical study and teaching today.

On behalf of the Commission, I invite you to state your views on these questions and to do so frankly and without reserve. Knowing that much thought may have been already devoted to the role of philosophy in liberal education and to the situation in the post-war world, we should like to receive from you whatever information you are free to give on such matters, for example, as courses of study presently offered or planned, special methods of instruction, the nature and extent of collaboration between scholars in philosophy and those in other disciplines, and ways in which philosophy is given a practical bearing on human affairs.

If you know of any other persons in your community who would be interested in the subjects of our inquiry, please be so good as to send me their names and addresses so that they may be invited to express their views. The Commission will greatly appreciate any aid you may extend to it.

Yours faithfully,

CHARLES W. HENDEL, *Secretary*

About two hundred persons in other walks of life than scholarship and teaching were sent a similar letter. Their names were suggested to the Commission both by members of the Association and by many interested persons outside the profession.

Two hundred and seventy-four letters came in response. Of the total one hundred and ninety-eight came from persons connected with academic institutions, and of that total one hundred twenty-nine were from writers and teachers of philosophy, fifty-eight from scholars in other fields, and fifteen from administrators, deans and presidents of colleges and universities. The remainder came from government officials and administrators; members of the clergy, Catholic and Protestant; officers of civic bodies; men engaged in business and finance; editors; and men in military service. The foreign scholars who responded represented twenty-two nationalities.

The following persons, besides a hundred and twenty members of the American Philosophical Association, sent letters to the Commission:

Walter R. Agard, H. E. Alexander, Wilhelm Anderson, Sister Mary Annice, Paul Appleby, Donald C. Babcock, Roger N. Baldwin, William Wallace Bancroft, James M. Barker, Marcel Barzin, Jacques Barzun, Jo-

seph Warren Beach, Charles Beard, E. T. Bell, Bruno Bettelheim, Alfred M. Bingham, Remsen D. Bird, Boyd H. Bode, Julius Boraas, Henry W. Brann, John M. Brewer, Lyman Bryson, A. J. Carlson, Gordon K. Chalmers, William L. Chenery, Y. L. Chin, James B. Conant, Robert F. Creegan, Carter Davidson, Godfrey Davies, Leonard F. Dean, George B. deHuszar, John K. DeLoach, V. Dossogne, W. E. B. DuBois, Knight Dunlap, Richard Emrich, A. C. Ewing, Walter Fales, Hellmuth Falkenfeld, Elihu T. Feinberg, Kenneth J. Foreman, Solomon Frank, Lucy J. Franklin, Sister Mary Frederick, Paul T. Fuhrmann, R. W. Gerard, Meta Glass, Eugene Guerster, Steinhausen, Heinz Herrmann, Richard Hoenigswald, Byron S. Hollinshead, Karen Horney, Walter M. Horton, Palmer Hoyt, Alfred M. Huffam, Roline R. James, Howard M. Jones, Sholom J. Kahn, Grayson N. Kefauver, Andrew J. Krzesinski, John Laird, Harold D. Lasswell, W. S. Learned, Alfred M. Lee, Robert S. Lynd, Kathryn McHale, John MacLean, John H. Melzer, Ralph V. Merry, Samuel H. Monk, Josiah Morse, W. H. Nes, Horace E. Orr, John J. O'Brien, Otto A. Piper, Frank C. Porter, G. Thomas Preer, Robert Redfield, J. B. Rhine, Ernest Roenau, Miriam Theresa Rooney, Harry Scherman, Max Schoen, Richard H. Shryock, George N. Shuster, W. W. Sikes, Alfred D. Simpson, Paul F. Sonneborn, Raymond Swing, Mary Frances Thelen, Wendell Thomas, William M. Vermilye, W. R. Vivrett, Jerry Voorhis, W. L. Wade, Harold E. Warner, W. Preston Warren, Hugo C. M. Wendel, Helen C. White, Benjamin F. Wright, L. B. Wright, Albert C. Outler, Virginia Onderdonk.

Communications came in the form of reports from members of committees of the Association and other organizations which supplied information about work being done or projected. Valuable material was contained in the communications and reports from the following:

Committee on the Role of Philosophy in Higher Education and its subcommittee on The Teaching of Philosophy of the Western Division (Everett W. Hall);

The Pacific Conference on the Teaching of Philosophy (Elmo A. Robinson, John A. Irving);

Report of the Committee on the Teaching of Philosophy of the Eastern Division of the American Philosophical Association. *School and Society*, July 4, 1942, Vol. 56, No. 1436, pp. 4-9.

A Statement on the Place of Philosophy in Higher Education: Committee of the Southwestern Philosophical Conference. *Association of American Colleges Bulletin*, Vol. XXVII, No. 3, October 1941. pp. 519-523.

Report on Adjustment of the College Curriculum to Wartime Conditions and Needs. Report No. 9—Philosophy. Federal Security Agency, U.S. Office of Education, Washington, D.C.: Committee appointed by the American Philosophical Association, Brand Blandshard, Chairman. pp. 1-5.

Report of the Committee on the Teaching of Philosophy in Junior Colleges (Orvil F. Myers).

Report on the results of a questionnaire and discussion held in the Jesuit Philosophical Association (J. A. McWilliams, S.J.);

Reports of the Association of American University Women, the Committee on Membership and Maintaining Standards.

Minutes of Conferences on the Humanities During and Following the War, Auspices of the Social Science Foundation, Denver, Colo.

Reports of the Committee on Philosophy of Law and Government, of the American Catholic Philosophical Association (Miriam Teresa Rooney).

Discussions of the Project of a Workshop for Philosophers (Gregory G. Walcott).

Presidential Address, Southern Society for the Philosophy of Religion (Albert C. Outler).

B. Regional Conferences. The Commission held seven regional conferences in order to meet with a number of its correspondents and with others who had ideas and proposals for discussion. The names of those who attended these two-day conferences are listed below. A few others were invited but were prevented from attending at the last minute. The Commission aimed at having meetings not larger than twenty-five in number in order to obtain genuine discussion.

Preliminary to the meetings a set of questions were sent to every one participating merely to suggest the kind of topics which seemed at first sight to be most appropriate or fruitful. Two sessions of the conferences were always opened by some one from the region in which the meeting was held; the second meeting was intended to furnish an occasion for the discussion of the relation of philosophy to the community; and the third and final session on the following day started with a résumé by Brand Blanshard of the previous discussions after which the conference proceeded to deal with the issues arising out of the preceding argument and with matters that still stood out as needing discussion.

1. *Chicago.* The first conference was held in Chicago on December 1-2, 1943, at the Drake Hotel. Everett W. Hall opened the first session; Gordon K. Chalmers, President of Kenyon College, the second. Upon the conclusion of the conferences, a joint meeting was held of the Commission and the Committee on the Role of Philosophy in Higher Education of the Western Division. The continuing activities of that Committee were discussed as well as its enterprise in the publishing of a periodical *Newsletter* sent to members of that Division. The membership at the Chicago conference was drawn from the following states of the region: Ohio, Indiana, Illinois, Iowa, Missouri, Colorado, Wisconsin, Minnesota, and the Province of Manitoba in Canada.

Paul Russell Anderson, James M. Barker, A. Cornelius Benjamin, Max Black, Theodore Brameld, Alburey Castell, Gordon Chalmers, Joseph W. Cohen, Frank W. Dickinson, Horace S. Fries, W. S. Gamertsfelder, George R. Geiger, Coleman R. Griffith, Everett W. Hall, Charles Hartshorne, Charles D. W. Hildebrand, Robert M. Hutchins, Howard B. Jefferson, Harry Jellema, Frank Knight, Wayne A. R. Leys, Rupert C. Lodge, Richard McKeon, F. E. MacMehan, James A. McWilliams, John Marshall, Fritz Marti, Merritt H. Moore, Bertram Morris, Curtis W. Reese, Howard D. Roelofs, Ernest Roenau, Paul A. Schilpp, Laurence Sears, Harold A. Taylor, Leo R. Ward, Henry Nelson Wieman.

2. *Berkeley.* The second conference was held at Berkeley, California, December 6-7, 1943, where the Commission enjoyed the hospitality of the Uni-

versity of California and particularly that of the Women's Faculty Club for luncheon and dinner. Arrangements for this hospitality were made through the kindness of Donald S. Mackay. Donald S. Mackay opened the first session, George P. Adams, Dean of the College of Letters and Science, the second. Those attending the conference came from California, Oregon and British Columbia in Canada.

George P. Adams, Allen C. Blaisdell, Anson S. Blake, William R. Dennes, Albert I. Elkus, Raymond D. Harriman, John A. Irving, B. H. Lehman, J. Loewenberg, G. D. Louderback, A. C. McGiffert, Jr., Donald S. Mackay, Paul Marhenke, Georgiana Melvin, James K. Moffitt, Stephen C. Pepper, John R. Reid, Robert G. Sproul, E. W. Strong, T. J. Teggart, H. G. Townsend, Lynn White, Jr.

3. *Los Angeles*. The third conference was held December 10-11, 1943, at Los Angeles, in the University Club for whose hospitality the Commission is grateful as well as for the gracious services of John Elof Boodin who made the arrangements for the conference there. The first session was opened by Donald A. Piatt, the second by Gordon Watkins, Professor of Economics and Dean at the University of California at Los Angeles. Those attending came from Southern California.

Clifford L. Barrett, Remsen D. Bird, John Elof Boodin, Arthur G. Coons, Godfrey Davies, Robert E. Fitch, Samuel Lindauer, Hugh Miller, Robert A. Millikan, Donald A. Piatt, A. S. Raubenheimer, Hans Reichenbach, Gordon Watkins, Louis B. Wright, Ralph T. Flewelling, Richard Hocking, Orvil Myers, Charles H. Reiber, Una B. Sait.

4. *New Orleans*. The conference was held in the St. Charles Hotel, December 16-17, 1943. Arrangements were made by Marten ten Hoor, then Dean of the Tulane University. The first session was opened by Peter A. Carmichael and the second by Marten ten Hoor. Those attending came from Texas and Mississippi.

Peter A. Carmichael, James K. Feibleman, John M. Fletcher, Russell M. Geer, George Gentry, Edward S. Hathaway, Iredell Jenkins, Harry M. Johnson, Harold N. Lee, Roger P. McCutcheon, Frederick W. Meier, Joseph Reck, Marten ten Hoor, R. A. Tsanoff, William R. Vivrett, Everett T. Kircher, William H. Nes.

5. *Baltimore*. The conference was held in the Belvedere Hotel, December 20-21, 1943. Assistance was rendered by George Boas and subsequently by Raymond P. Hawes in making the arrangements. The first session was opened by Albert G. A. Balz, the second by Alexander Meiklejohn. Those attending came from Baltimore, Washington, D.C., Maryland, Virginia, and North Carolina.

W. F. Albright, Albert G. A. Balz, Stringfellow Barr, Scott M. Buchanan, Gertrude C. Bussey, Paul Green, Katharine E. Gilbert, Marjorie S. Harris, Raymond P. Hawes, Walker H. Hill, L. O. Kattsoff, Alexander Meiklejohn, James W. Miller, Lincoln Reis, Carl F. Taeusch, Alban G. Widgery, Robert Leet Patterson, David Baumgardt, Helen Hosp, Fred Safier, Harold E. Warner.

6. *New York*. The conference was held in the Beekman Tower Hotel, February 4-5, 1944. The first session was opened by Theodore M. Greene,

the second by Ordway Tead, Chairman of the Board of Higher Education, New York City. Those attending came from Pennsylvania, New Jersey, Delaware, Connecticut, and from the Province of Ontario, Canada.

Maximilian Beck, John S. Brubacher, Henry Seidel Canby, Ernst Cassirer, Grace A. deLaguna, Irwin Edman, Marvin Farber, Horace Friess, T. M. Greene, George Gurvitch, Sidney Hook, George Humphrey, Horace M. Kallen, Alexandre Koyré, Susanne Langer, Arthur Lapan, Otis Lee, Alain Locke, Robert Lynd, Henry Margenau, John Marshall, William P. Montague, Glenn Morrow, Ernest Nagel, Marjorie Nicholson, Reinhold Niebuhr, F. S. C. Northrop, John H. Randall, David S. Roberts, Richard Robinson, George Sabine, Herbert Schneider, Paul Schrecker, Robert M. Scoon, W. T. Stace, David H. Stevens, Ordway Tead, William M. Vermilye, Gregory D. Walcott, Paul Weiss, Hugo C. M. Wendel, Max Schoen, Oskar Piest.

7. *Boston.* The conference was held February 7-8, 1944, in the University Club of Boston which generously extended hospitality for rooms and meals, arrangements being made by Edgar S. Brightman. The first session was opened by Edgar S. Brightman, the second by Henry M. Wriston, President of Brown University. Those attending came from the whole New England region and from Montreal, Canada.

Lawrence Beals, Peter Bertocci, Seelye Bixler, Edgar S. Brightman, H. S. Broudy, Leonard Carmichael, Y. L. Chin, Cecil Currie, Raphael Demos, George de Santillana, Roger W. Holmes, Howard M. Jones, Cornelius Krusé, Sterling P. Lamprecht, Harold A. Larrabee, Alice A. Lazerowitz, Michael Martin, Margaret S. Morriss, John A. O'Brien, S.J., Virginia Onderdonk, Edna A. Shearer, Overton H. Taylor, Jean Wahl, Philip Wiener, John Wild, Donald C. Williams, Henry M. Wriston, Mary Lowell Coolidge.

The Commission was ably assisted by Paul L. Holmer, Assistant to the Secretary, who attended to all the details of the arrangements for the conferences.

Members of the Commission participated in conferences held on the initiative of other groups: A Philosophy Club in New York City; a conference at Colby College in Maine; Annual Meeting of the American Professional Women's Association in Washington, D.C.; meeting with the University Committee on the Objectives of a General Education in a Free Society, Harvard University; joint meeting with The Commission on Liberal Education of the Association of American Colleges at Williams College on the subject Philosophy and Religion in Liberal Education.

III

Conferences of the Commission: Discussion of Findings and Preparation of the Publications.

Aside from the constant meetings for a month during November and December, 1943, and a week in February, 1944, while holding the regional conferences and traveling, the Commission met at the following times in the Beekman Tower Hotel, New York City: August 8-9, 1943; October 12-13, 1943; July 14-16, 1944; October 6-8, 1944; December 8-10, 1944.

At these meetings the special studies for the projected book were planned and assigned to the appropriate authors, drafts of the chapters discussed and revision decided upon. The book was a product of considerable collaboration and mutually helpful criticism.

IV

Outstanding Business.

At the last meeting of the Commission in December, 1944, prior to the expiration of the grant from the Rockefeller Foundation, a plan was formed for the drawing up at some later date of a few recommendations for action by the Association. The Commission regards its essential work to have been accomplished with the publication of the letters selected and edited in *From the Commission's Mailbag* and of the book *Philosophy in American Education*. Besides the "Things That Can be Done" in Part III of the book there were some practical suggestions or proposals discussed by the regional conferences and the Commission itself subsequently which involved concerted action on the part of the Association as a whole. The plan at the December, 1944, meeting was to have the several members of the Commission present the proposals to the next annual meeting of the three Divisions of the Association and then to meet once again after these tryouts of the ideas and formulate the questions for final presentation to the whole association. The cancellation of the annual meetings of the Divisions, owing to the transportation difficulties of the country, has made the immediate execution of this plan impossible. We do not consider consultation on such subjects by mail to be a satisfactory solution of the problem and consequently we are postponing this final piece of business.

Besides such proposals there are other things to be done that have opened up to the Commission which could not be explored in the time at its disposal. We had to concentrate upon the major task of dealing with liberal education in the college, with problems concerning education of teachers of philosophy, with general courses, the basic studies, various sorts of relationship between philosophy and liberal arts studies in the usual university program, and finally with the function of philosophy in the larger community. Further studies and inquiries are needed—for instance, on the contemporary relations of philosophy to law and legal education, to the social sciences, to theology and even, it has been suggested, to medicine. The subject of philosophy and art has gained a new urgency in view of the importance of the aesthetic aspect of experience in the philosophy of Latin America with which, it is very widely believed, we should have closer relationship and understanding. And the international relations as a whole in the field of philosophy, are matters deserving most serious consideration, the acquiring of knowledge, particularly of Russian and Oriental culture and philosophy. Some consideration of these still outlying problems of the profession should be given at the future meetings of the Divisions of the Association and of the Commission itself.

V

Report of the Treasurer.

The report of the Treasurer was audited by Horace L. Friess and James Gutmann, of New York City, on February 9, 1945. Certified copies of the report were deposited with the Secretary of the National Board and the Comptroller of the Rockefeller Foundation, who accepted it and notified the Treasurer and the Secretary of the Board that the account of the grant is satisfactorily closed.

An analysis of the costs of the project is here reproduced, being page 2 of the official accounting.

Commission on the Function of Philosophy in Liberal Education
Accounting of Charles W. Hendel, Treasurer
December 31, 1944

A. Receipts:

1. From Rockefeller Foundation Grant—

Sept. 9, 1943	\$ 2,500.00	
Nov. 9, 1943	5,000.00	
Nov. 29, 1943	1,000.00	
Jan. 26, 1944	1,500.00	
	<hr/>	
	\$10,000.00	\$10,000.00

2. Refunds

Charles W. Hendel, Jan. 4, 1944	\$ 23.76	
Charles W. Hendel, Feb. 9, 1944	27.80	
Penna. R.R., Feb. 13, 1944	7.87	
Beekman Tower, Feb 25, 1944	2.00	
N.Y. Central R.R., Jan. 28, 1944	16.87	
	<hr/>	
	\$ 78.30	78.30

Total received	\$10,078.30
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B. Disbursements total as verified by vouchers and check book and petty cash account

8,456.69

Balance December 31, 1944	\$ 1,621.61
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Explanation of B:

Disbursements by check accounted for \$ 8,814.99

Minus:

(a) Cash by checks\$1,078.75

(b) Cash accounted for ... 720.45

(c) Cash not disbursed ..\$ 358.30 358.30

Total disbursements accounted for\$ 8,456.69

C. Costs to complete project and Report \$ 1,200.00

Completion of the Report for the Commission and the contributing members of the inquiry—preparation of manuscripts, editing, proofreading, etc., of the Report in two parts—

(1) Book, *Philosophy in American Education*, being published by Harper & Brothers

(2) Pamphlet of Supporting Documents, publisher not yet decided

This debit includes also making available copies of the Report in two parts to those who contributed to the Regional Conferences and supplied supporting documents

D. Net balance after completion of the project	\$ 421.61	
E. Due the Rockefeller Foundation		\$421.61
F. Costs of the project	\$ 8,456.69	
	1,200.00	
	<hr/>	
	\$ 9,656.69	
Minus refunds	78.30	
	<hr/>	
Cost	\$ 9,578.39	
Balance due Rockefeller Foundation	421.61	
	<hr/>	
	\$10,000.00	

Analysis of Costs of the Project

I. Regional Conferences November 29 to December 22, 1943, and February 3-9, 1944		
1. Traveling expenses of Commission (exclusive of meals, etc., in item 3, during the meetings of the Regional Conferences)	\$2,029.52	
2. Traveling expenses of members of Conferences (exclusive of meals, etc., in item 3 during the meetings of the Regional Conferences)	1,005.87	
3. Hotel charges, rooms, meals and costs of holding meetings	2,121.06	
4. Printing and clerical work (letters to 1,500 persons)	440.62	
	<hr/>	
Total	\$5,597.07	
Less refunds	78.30	\$ 5,518.77
	<hr/>	

II. Conferences of the Commission in New York planning the inquiry and the Report: August 1943, October 1943, July 1944, October 1944, December 1944		
1. Traveling expenses	\$1,268.46	
2. Hotels, meals	372.69	
3. Clerical and printing stationery	393.47	2,034.62
		<hr/>
III. Salary of assistant		825.00
IV. Preparation of manuscript of Report in two parts:		
1. Book being published by Harper & Brothers, <i>Philosophy in American Education</i>		
2. Pamphlet of Supporting Documents and distribution of Report to members of the Conferences and contributors		1,200.00
		<hr/>
Total Expense		\$ 9,578.39
Balance to Rockefeller Foundation		421.61
		<hr/>
		\$10,000.00

We, the undersigned Auditors appointed by Brand Blanshard, President of the Board of Officers of the American Philosophical Association, have examined the accounts of Charles W. Hendel, Treasurer of the Commission on the Function of Philosophy in Liberal Education as herewith presented on pages one and two, and we have found them correct.

Signed: HORACE L. FRIESS
JAMES GUTMANN

Date: February 9, 1945

FINANCIAL STATEMENT

Year Ended December 31, 1944

*The American Philosophical Association
Middletown, Connecticut*

We have examined the accounts and records of Cornelius Krusé, Secretary-Treasurer, for the year ended December 31, 1944.

Recorded receipts were verified and compared with bank deposits and all expenditures were evidenced by cancelled checks and supporting vouchers.

Cash balances at the end of the period were confirmed to us directly by the depositories and Government Bonds on file for safe-keeping were inspected at the Middletown National Bank of Middletown, Connecticut.

Based upon the foregoing, we hereby certify that the attached statement of receipts and disbursements reflects the results of the financial operations for the year ended December 31, 1944.

KNUST, EVERETT AND CAMBRIA
Certified Public Accountants

Hartford, Connecticut
April 30, 1945

THE AMERICAN PHILOSOPHICAL ASSOCIATION

Summary of Cash Transactions
Year Ended December 1944

	General Treasury	Revolving Fund for Publication	Montague Adams Fund
Cash Balance—December 31, 1943	\$1,146.40	\$10,228.41	\$146.18
<i>Cash Receipts:</i>			
Dues and Proceedings			
Eastern Division	246.33		
Western Division	126.48		
Pacific Division	50.49		
Sale of <i>Proceedings</i>	3.00		
Sale of <i>Proceedings</i> of Sixth Congress of Philosophy	2.50		
Royalties (McGraw-Hill Book Co.) ...		39.60	
Interest on Savings Account and Gov- ernment Bonds		218.36	.71
Total Receipts	\$1,575.20	\$10,486.37	\$146.89
<i>Cash Disbursements:</i>			
Audit 1943	\$ 10.00		
American Council of Learned Societies, dues	25.00		
Printing <i>Proceedings</i> , 1943	116.55		
Printing and Binding of Vol. XVII— PHILOSOPHICAL REVIEW	99.27		
Stenographic and Clerical Aid	23.15		
Printing and Stationery—James D. Young Company	8.25		
Express and Postage—Publication Com- mittee	13.89		
A. N. Marquis Company— <i>Who's Who</i> in Latin America	9.00		
Postage and Wrapping on 23 Copies of <i>Thomas Bibliography of John Dewey</i> Sent to Latin American Libraries ...	5.06		
Stamps	15.03		\$25.00
Compiling List of Recent North Ameri- can Philosophical Books for American Library Association for Use in Latin America	10.60		
40 Copies of <i>Cahiers d'Haiti</i> —Special Congress Number	20.00		
Bank Charges—Safe Deposit Rental (2 years)		7.20	
Total Disbursements	\$ 355.80	\$ 7.20	\$ 25.00
Balances—December 31, 1944	\$1,219.40	\$10,479.17	\$121.89

Recapitulation of Funds
Year Ended December 31, 1944

General Treasury:

Hartford-Connecticut Trust Company, checking account\$ 1,219.40

Revolving Fund for Publication:

Middletown National Bank, savings account #10604 2,679.17
 United States Government Bonds, Series "G" (on deposit in
 safe deposit vault of Middletown National Bank), maturity
 value 7,800.00

Montague-Adams Fund:

Central National Bank, savings account #16510 121.89

Total—All Funds \$11,820.46

Report of the Secretary of the Board of Officers

Late in the fall of 1944 many learned societies felt that circumstances might permit a resumption of annual meetings after their omission in many cases over several years. In accordance with this general feeling, plans, in a more or less advanced degree, were in progress for a resumption of Divisional meetings of the Association, when, once again, the Office of Defense Transportation urgently requested that meetings involving railroad travel be avoided. These meetings generally had been planned for a date later than the Christmas season, in part by tradition, but in part also in order to avoid the congested travel of the holiday period. The postponement of the publication of the *Proceedings* reflects the later scheduling of a meeting that subsequently was cancelled. It was hoped that by postponement the program, the report of the business meetings, and, above all, the presidential addresses of the Divisions could be included without much delay. Since no meetings were held, however, all business was once again transacted by executive committees and by mail. In spite of the omission of meetings, three presidential addresses, which had been prepared by past presidents but have never been delivered, are included in this year's *Proceedings*: two from the Pacific Division and one from the Eastern Division. The Western Division plans to receive two presidential addresses at their next resumed meeting.

Perhaps one of the most regrettable aspects of the cancellation of the scheduled meeting of the Eastern Division was the further postponement of the Association's reception of Professor Cohen's Carus Lectures. Originally planned to be a part of the projected First Inter-American Congress of Philosophy which, as will be remembered, had to be abandoned on account of Pearl Harbor, these lectures on *The Meaning of Human History* have been ready for delivery for a long time. Happily, the Faculty of Philosophy of the City College of New York has invited the Board of Officers to schedule the delivery of the Lectures at the City College for May 17 and 18 of this year. The Board of Officers unanimously voted to accept this gracious invitation and hopes that the audience, though of necessity regional, will by its numbers fittingly reflect the interest of the Association in these Lectures.

Meanwhile the Carus Lectures Committee has announced that C. I. Lewis has been designated by unanimous vote to be the next lecturer in the Carus Lectures Series. These lectures, seventh in the series, will be delivered as soon as transportation facilities allow the resumption of meetings.

In the last report of the secretary mention was made of the invitation which the Association had received through the Division of Cultural Cooperation of the State Department from La Société d'Etudes Scientifiques of Port-au-Prince, Haiti, for participation in an International Congress of Philosophy on the subject of Epistemology. While it was evident from the start that on account of transportation difficulties and war conditions generally the actual presence of members of the Association could not be arranged for, excellent representation by papers was made possible by the fine response of members to the appeals made to them by the Chairman and Secretary of the Board of Officers. A.C. Benjamin, C. J. Ducasse, W. P. Montague, William Seifriz, W. T. Stace, Paul Weiss and John Wild prepared papers for the Congress which were read by the president of the Congress, Dr. Camille Lhérisson, and by the secretary, whose presence at the Congress was made possible through the generosity of the convoking Haitian Scientific Society and with the aid of the State Department. A full account of this memorable congress—which has the honor of having been the First Inter-American Congress of Philosophy—appears in the *Journal of Philosophy* of January 18. The Haitian convoking society wished to show its appreciation of the participation of the Association by making the secretary Vice-President of the Congress, by devoting a whole day to philosophy in the United States, and by proposing, as was unanimously voted by the Congress, that the next Inter-American Congress of Philosophy be held in the United States under the auspices of the Association. The Division of Cultural Cooperation of the State Department has expressed to the secretary great appreciation of the support given by the Association to the Congress and the general work of inter-American cultural cooperation. It is evident that unprecedented opportunities for cultural contacts with philosophers in Latin America are presenting themselves. It is gratifying to note that in the last year both the Simon Guggenheim Foundation and the Rockefeller Foundation have granted a number of fellowships to promising young Philosophers from Brazil, Chile, Peru, and Mexico. Some members of the Association have been in close contact with these scholars during the period of their study in this country, and doubtless over the years these contacts will mean much in fostering mutual understanding and closer cultural cooperation.

As a further indication of the increasing opportunities for cultural interchange mention should be made of the United States Quarterly Book List which is published by the Library of Congress at the request of the Department of State. This list is the outgrowth of a recommendation made by the Inter-American Conference for the Maintenance of Peace, held in Buenos Aires in 1936, in accordance with which each American republic would issue a quarterly bulletin "giving bibliographical notice of recently published works of a scientific, historical, literary, or artistic nature, to be distributed and exchanged among the republics by suitable government agencies". Dr. Joseph P. Blinksderfer, editor of the Book List, has requested participa-

tion of members of the Association in this important undertaking.

The report of the Committee on Bibliography reflects the increasing opportunities for providing Latin-American scholars in the field of philosophy with more adequate information regarding the philosophical work done in this country by members of the Association.

It is gratifying to note that the authorities in charge of planning for post-armistice education of the armed forces have requested a committee of members of the Association to prepare an introduction to philosophy for such post-armistice use. The Committee was composed of Brand Blanshard, W. E. Hocking, Charles W. Hendel, and J. H. Randall, Jr. As Professor Blanshard has stated elsewhere in the *Proceedings*, the result of the work of this Committee: a new text *Preface in Philosophy* and two accompanying books, an anthology of readings and a work-book of questions and exercises, are now in press.

Elsewhere in the *Proceedings* there appears a full account by Professor Hendel of the excellent work done by the Association's Commission on Philosophy in Liberal Education. The Commission has earned the gratitude of the Association for its great investment of time and energy in studying with such thoughtfulness the problem of the role of philosophy in American education, and in stimulating through important regional conferences and through correspondence public interest in philosophy and discussion of how philosophy may most profitably serve the post-war world. The Rockefeller Foundation has likewise put the Association in its debt for its generous grant-in-aid which made this important study possible.

The Chairman of the Board of Officers reappointed C. J. Ducasse as one of the Association's two delegates to the American Council of Learned Societies, and appointed Katharine Gilbert to fill out the unexpired term of F. S. C. Northrop who resigned from the Publication Committee. He also appointed Max Black as a member of the same committee for a four-year term.

The Board of Officers elected E. A. Burt, W. R. Dennes, H. G. Townsend to the Committee on Carus Lectures. Cornelius Krusé was re-elected secretary-treasurer for a term of three years.

President John Nason of Swarthmore College represented the Association at the installation of Edwin E. Aubrey as President of Crozer Theological Seminary, Chester, Pennsylvania.

For the Board of Officers,
CORNELIUS KRUSÉ, *Secretary*

WESTERN DIVISION

President: G. P. Conger

Vice-President: A. E. Murphy

Secretary-Treasurer: George R. Geiger

Executive Committee: The foregoing officers and George Gentry, Charner Perry and Howard Roelofs.

The Executive Committee of the Western Division voted to comply with the request made by the Office of Defense Transportation, and accordingly cancelled the May Meeting of the Division. Papers had already come in and the program committee was holding a preliminary meeting at the very

time the Office of Defense Transportation made its request. But the committee felt that there was still a sufficient margin of time to change the plans for the meeting without too much inconvenience. It is hoped that meetings can be resumed in 1946.

Last year's election of officers was held with the presumption that the elected officers would serve until the next regular meeting of the Division. Although the present officers had no particular desire to keep themselves in office, the executive committee, acting on last year's presumption, recommended that no election be held this spring. There were a number of reasons for this suggestion, the principal ones seeming to be that the partially inactive status of the Division would appear to make another mail election superfluous; that the membership ought to have the opportunity of face-to-face contact in an actual meeting before being asked to choose officers again; and that since there are now two presidential addresses waiting to be delivered, a third one might begin to prove embarrassing.

The executive committee recommended, and the Division elected, the following candidates as new members of the division: Waldo Beach of Antioch College, Arthur Berndtson of the University of Missouri, Robert Ward McEwen and Martin Eshleman of Carleton College, Harold Taylor of the University of Wisconsin, and Golden O. Thompson of Western Union College.

A number of members of the division have died since the last meeting, and memorials for them have been prepared and appear in this issue of the *Proceedings*. A possibly incomplete list of recently deceased members includes: R. K. Hack, Dean L. T. More, Frederick B. Oxtoby, Charles M. Perry, Ruth Willis Pray, F. C. Sharp, and James H. Tufts.

The only additional business item was the proposed merging of the Committee on the Role of Philosophy in Higher Education with its Subcommittee on the Teaching of Philosophy. One reason for this merger is that Arthur E. Murphy, Chairman of the committee, is going to Cornell next year and has resigned as Chairman. Everett Hall, formerly head of the Subcommittee, will become Chairman of the merged group.

FINANCIAL STATEMENT

May 11, 1944 to April 20, 1945

Receipts:

Balance on hand, May 11, 1944	\$422.12
Dues collected to date	352.00
<i>Total</i>	<u>\$774.12</u>

Expenditures:

Amer. Phil. Assoc., dues and proceedings	126.48
Audit, 1942-44 (authorized by last year's executive committee)	24.75
Stationery, printing, clerical	39.94
Postage, bank charges	26.85
<i>Total</i>	<u>218.02</u>

Balance on hand, April 20, 1945	\$556.10
Dues outstanding (through 1944)	\$254.00

(The number of members in the armed forces partially accounts for the arrears being as large as this.)

George R. Geiger,
Secretary-Treasurer

The following memorial notices have been prepared for the Division:

The death of Dr. Ruth Willis Pray in July 1941 removed from the Association a prominent worker in the field of esthetics and an authority on the art of the Indians of our southwest.

Dr. Pray was born in West Roxbury, Massachusetts, received her bachelor's and master's degrees from Oberlin College and her Ph.D. from the University of Chicago, and was for a time in the offices of the *International Journal of Ethics*. She taught philosophy at Oklahoma College for Women for fourteen years. In the summers she worked with archaeologists in their excavations at Jemez and at Chaco Canyon, collecting materials for a volume on a genetic approach to esthetics. This book was unfortunately not completed at the time of her death.

A colleague writes of Dr. Pray: "No one ever took her course without developing a real delight in Indian art. . . . Dr. Pray was a person of real charm, of much vitality, and with contagious enthusiasms. Philosophy was valuable in her own life and she wanted to communicate this value to others. Her unique contribution was in esthetics, where she not only discussed a philosophy of beauty but also developed a love of beautiful objects, especially of those indigenous to the southwest."

(Ethel Tilley)

Charles Milton Perry died in Norman, Oklahoma, on June 11, 1942, at the age of sixty-five. A native of Michigan, a graduate of Albion College, and a teacher and administrator in the public schools of Michigan, he pursued his graduate studies of philosophy at Ann Arbor, where he received his Ph.D. in 1911. After a year as instructor in philosophy at the University of Michigan and a year of philosophical study in Europe, followed by a decade spent in religious and social service, Dr. Perry proceeded in 1923 to his main career, as Professor of Philosophy at the University of Oklahoma. He organized and expanded the department of philosophy and set a standard of competent and effective teaching and also of vital liberal thinking which was felt not only at the university but throughout the state of Oklahoma.

Among his published works were the following: *Ironie Humanist*, *Henry Philip Tappan—Philosopher and University President*, *Toward a Dimensional Realism*, *The Multi-Dimensional Society*, *Democracy in Change: A New Dimension*. He also contributed to several coöperative volumes, and wrote a number of articles in philosophical, historical, and educational journals. Professor Perry was very active in the work of the Western Division of the American Philosophical Association especially as Chairman of the Committee on Philosophy and Higher Education. He was also president of the Oklahoma Academy of Science, and of the Southwestern Philosophical Conference, and Oklahoma state chairman of the American Civil Liberties Union. This variety of activities in which Professor Perry was a leader indicates his vigor and versatility. His career as a philosopher and a citizen was fired by a rare courage in his social convictions, alike in theory and in practice. He was not content to expound critical thinking in his professional work, but undertook to make liberal principles and social justice more convincing realities in American life, and directly in his chosen state of Oklahoma.

In his death the American Philosophical Association has lost an active and esteemed member, and American liberalism, especially in the Southwest, mourns the loss of a leader sane and balanced in judgment and inflexibly

loyal to social righteousness. His more intimate friends can never forget his generous spirit, stimulating company, and the cordial hospitality of his home.

(R. A. Tsanoff)

In the death of James Hayden Tufts, the American Philosophical Association has lost one of its Founding Fathers, and the philosophic way of life one of its most picturesque and stalwart practitioners.

Mr. Tufts was born at Monson, Massachusetts, July 9, 1862, and died at Berkeley, California, August 5, 1942. He was a fond and true cosmopolite in thought and a thoroughgoing national in geography. Professionally speaking, for instance, he belonged to the Eastern Division of our Association by birth and nurture, to the Western Division by long location at Chicago, and to the Pacific Division by choice of California for retirement. He had indeed been president of all our associational divisions: of the entire association, 1914, of the Western, 1906, 1914, and of the Pacific, 1934.

Mr. Tufts was trained at Amherst (B.A., 1884; M.A., 1890—also LL.D., 1904), at Yale University (B.D., 1889), and at Freiburg (Ph.D., 1902). He was active in the Pedagogical life of America for nearly half a century: instructor in mathematics, Amherst, 1885-87; instructor in philosophy, University of Michigan, 1889-91; teacher of philosophy, University of Chicago, 1892 to his retirement as professor and head of the department in 1930. After his retirement from Chicago, he became lecturer in philosophy, University of California at Los Angeles, 1931-33, receiving from this institution the LL.D. degree, 1937. In addition to his long career as teacher, he served at the University of Chicago at various times as dean of the colleges, dean of the faculties, vice-president, and for a crucial period as acting president of the University. He was head of his department at Chicago during his most active period, 1905-30, administering, teaching, and directing research in the history of ideas and in moral, social, and political philosophy.

Mr. Tufts has himself left an instructive account of how he found his way from the historical to the moral and social, and how in the latter domain he worked his way from a more or less static ethical inheritance to a creative view of the entire life of value. In this double regard his biography becomes microcosmic sociology; for, as he observed, "My generation has seen the passing of systems of thought which had reigned since Augustine". Though Mr. Tufts had chosen teaching as a vocation, indeed as a high calling, because of his "conviction", as he puts it, "of the high influence of ideas", nevertheless he did not elect to localize ideas in academic regalia, nor to limit to the schools his investigation into ideas, or his furtherance of their influence. He found ideas wherever they flourished and he followed ideas wherever they led him. So disposed, he did more than his share in making ideas influential in the larger world: in social service, in ecclesiastical institutions, in industrial and political endeavors.

The latter contexts had indeed as much influence upon Mr. Tufts as he had upon them. Early he was chairman of a committee for social legislation in Illinois (during which time also he was actively related to Hull House and its ferment), and he learned about morality and life from the politicians. Later he became head of the arbitration work in the great clothing firm of Hart, Shaffner and Marx, and he learned about ethics and life from labor and capital, and their conflicts.

What he learned from these wider preoccupations, and especially from the work of an industrial arbitrator, was this: that if there be any dependable right and wrong as between honest men in serious conflict, nobody knows for certain what it is, though every partisan thinks he knows. As arbitrator, Mr. Tufts soon discovered that absolute justice, for instance, might just as well not be, for all the good it does men who know not what it is—or, for all that, had probably better be presumed not to be than to be at the beck and call of the fanatical, who think always to monopolize its being and then to perpetrate its obligation. Through hard experience Mr. Tufts was driven to see that too much devotion to the too narrow is the death of ethics; or, in terms more positive, that sympathy goes further in discovering truth and in discerning justice than does all dogmatic convictionism.

It was a long journey from his early labor of love as translator of Windelband's dry conceptual *History of Philosophy* to Mr. Tufts later preoccupation with the conflict of facts and of claims in a hard fought labor case. Yet such was the journey of this one life. Out of the travail of that trip arose Mr. Tufts' genetic and evolutionary contribution to the Dewey and Tufts' *Ethics*, which for a generation revolutionized the teaching of ethics in American colleges. Out of that travail arose also his contribution to the volume called *Creative Intelligence* and a group of books ending with his last, *America's Social Morality*. In that travail Mr. Tufts helped found, and for a decade and a half edited (not infrequently supporting financially), *The International Journal of Ethics*, which he officially dedicated in particular "to the principles of justice and of law as the agency of justice, . . . a common ground for interchange of views between students of law and students of ethics and the social sciences".

Yes, in the long and interesting voyage of his, which men in retrospect call Life, this pilgrim looked in upon law as the lair of justice, upon the strident evolution of industrial institutions, upon the changing emphases of religion, upon the slow accretions of aesthetic norms, and, through all and over all, upon the poignant convulsions of human conscience under the impact of a massive moving world. "As I look back", Mr. Tufts wrote from retirement, "I see that my chief business has been learning . . . learning seems by far the most important part of my life. . . . Teaching certainly gives opportunity for learning, and I gladly learned". Higher praise would be hard to invent than the conning of this simple acknowledgment of fact. It was through this complete dedication to growth as the ideal of life and the only salvation of Reason itself, whether "pure" or "practical", that Mr. Tufts fitted himself to join, with George Eliot, whom he admired—

the Choir Invisible
Of those immortal dead who live again
In minds made better by their presence; live
In pulses stirred to generosity,
In deeds of daring rectitude, in scorn
Of miserable aims that end with self,
In thoughts sublime that pierce the night like stars,
And with their mild persistence urge men's search
To vaster issues.

(T. V. Smith)

Sister Mary Verda was born in the city of Baltimore, and died at St. Mary's College, Holy Cross, Indiana, on her fifty-fifth birthday, September 20, 1942. For thirty years she was a teacher, most of that time in philosophy at St. Mary's College. She was well known among Scholastics and non-Scholastics for her work entitled *New Realism in the Light of Scholasticism*, and was an active member of the American Catholic Philosophical Association.

(Charles A. Hart)
(Leo R. Ward)

Frederick Breading Oxtoby, Professor of Philosophy and Religion at Illinois College, Jacksonville, Illinois, since 1927, died October 19, 1942. He was born in Saginaw, Michigan, October 20, 1881. He graduated from the University of Michigan in 1905, received the Bachelor of Divinity degree from McCormick Theological Seminary in 1908, the Master of Arts degree from the University of Chicago in 1914, and was awarded the Doctor of Divinity degree by Alma College in 1918. Prior to his position at Illinois College he taught Old Testament and Hebrew at the Chicago Theological Seminary (1910-1914), and Religion and Religious Education at Huron College (1915-1926).

Dr. Oxtoby was best known for his research in Biblical Literature. He studied in Berlin and Marburg in 1909-1910, and spent a further year in the Near East, mostly at the American University of Beirut. He was the author

of three volumes, *Making the Bible Real* (1921), *Israel's Religious Development* (1927), and *The Life Story of the Bible* (1929). His contribution to Philosophy was that of a friendly and devoted teacher who impressed his students with the relevance and significance of philosophical issues.

(Paul Russell Anderson)

Frank Chapman Sharp was born at Union City, New Jersey, July 30, 1866, and died at Madison, Wisconsin, May 4, 1943. He was graduated from Amherst College in 1887 and received the degree of Doctor of Philosophy from the University of Berlin in 1892. Upon his return from Germany he taught at the Condon School for Boys in New York City and was head worker in the University settlement. He came to the University of Wisconsin as an instructor in 1893. From 1905 to 1936 he was Professor of Philosophy, holding the position of Chairman of the Department during the last two years of this period. From 1936 until his death he was Emeritus Professor of Philosophy. In 1907 he served as President of the American Philosophical Association (Western Division).

Mr. Sharp published his study, *The Aesthetic Element in Morality*, in 1893, and from then until the time of his death produced a long succession of articles in philosophical and educational journals, primarily on ethical and moral problems. His published books include *Shakespeare's Portrayal of the Moral Life*, 1902; *The Influence of Custom on the Moral Judgment*, 1908; *A Course in Moral Instruction for the High School*, 1912; *Education for Character*, 1917; and his most important and comprehensive work, *Ethics*, 1928. In 1937 the last of his published books, *Business Ethics* (with Philip G. Fox) appeared, to climax his work in a field which he first opened to American higher education in 1913 and to which he devoted himself with great vigor and interest during all of his active teaching life. At the time of his death he had just completed the manuscript of another major work which he had tentatively titled *A Study of Moral Judgments*.

To his students Mr. Sharp was known not only for his wide and exact scholarship but also as an exceptionally conscientious and incisive teacher and loyal friend. His interest in Russian literature, his broad and exact knowledge of Christian origins, his intense but critical love of music, his demand for rigorous, exact thinking in every field—these are some of the striking characteristics which distinguished his personality.

Mr. Sharp's interest in ethics as an empirical science made of it an exceedingly practical subject which brought him into close contact with many of the business and professional institutions of our day. He sought his moral facts not only in daily life but also in historical writing, anthropological studies, novels, plays, newspapers, magazines, and in systematic questioning of individuals and groups. He believed his own systematic ethical theory to be fully supported by the data of moral experience and to be a practical guide to the achievement of valid moral ideals.

(S. L. Ely)

(E. B. McGilvary)

(P. G. Fox)

GEORGE R. GEIGER, *Secretary-Treasurer*

PACIFIC DIVISION

President: W. R. Dennes

Vice-President: Melvin Rader

Secretary-Treasurer: E. W. Strong

Executive Committee: The foregoing officers and Victor F. Lenzen *ex officio* for one year, John R. Reid (1945), Everett J. Nelson (1946), and C. J. Sullivan (1946).

In conformity with the request of the Office of War Transportation to postpone association meetings that require railroad travel, the Division did not schedule a meeting for 1944. For the second time the business of the Division had to be transacted by mail.

The election of officers was held late in January. The Executive Committee nominated W. R. Dennes and Melvin Rader for the offices of President and Vice-President respectively. They were elected. The Executive Committee nominated E. W. Strong for the office of Secretary-Treasurer. He was elected. The Executive Committee nominated Everett J. Nelson and C. J. Sullivan for two-year terms on the Executive Committee. They were elected.

The treasurer's report for the year 1944 was mailed to the membership and was approved:

Receipts

Balance on hand January 31, 1944	\$663.06
Membership dues	208.00
Interest on bank deposit	0.13

Total\$871.19

Expenditures

A. P. A. Treasury	\$50.49
Postage	10.08
Mimeographing	2.82
Stationery	4.30
American Trust Company	5.14

Total\$72.83

Balance on hand January 12, 1945\$798.36

Audited by Donald S. Mackay

The following memorial resolution was prepared by the Committee on Memorial Resolutions:

George Rebec, president of the Pacific Division of the American Philosophical Association, 1924-25, was born in Tuscola, Michigan, March 11, 1868, and died in Eugene, Oregon, May 20, 1944.

He was educated at the University of Michigan (B.A., 1891; Ph.D., 1897), and at the University of Strassburg (then in Germany) 1893-94. Subsequently, he studied art history and aesthetics in Italy, 1908-09, and intellectual and social conditions in Europe, 1922-23.

Professor Rebec is remembered as a leader of his generation in philosophical scholarship, in teaching and in social thinking and action. As a scholar he contributed life-long and substantially to a wide variety of journals and papers in the fields of education, literature and philosophy.

His long, wide and successful teaching career began with a post as instructor in English at the University of Michigan, 1891-93. For five years (1895-99) he was assistant professor and junior professor of philosophy at Michigan. During 1903 he served as lecturer in the Department of Public Instruction, Hawaii, and during 1909-10, as lecturer in the University Extension Division, Philadelphia. From 1912 to 1918 he was director of Educational and Civic Service of the University of Oregon in Portland, and in 1918 he became the first director of the Portland Extension Center, serving until 1923. He was professor of education at Reed College, 1920-21, and visiting professor of philosophy at Reed, 1931-32. He also taught as visiting professor of philosophy in summer sessions at the University of California (1926) and at Stanford University (1928). From 1921 till his death Professor Rebec was a prominent member of the faculty of the University of Oregon and the Oregon State System of Higher Education. From 1921 to 1933 he

served as professor of philosophy and dean of the Graduate School; from 1933 to 1938 as dean and director of the Graduate Division of the Oregon State System of Higher Education; and from 1938 to 1944 as Prince Lucien Campbell professor of philosophy, dean emeritus, and counsellor to the Graduate Division.

Professor Rebec was a brilliant teacher, lecturer and conversationalist. In the classroom, on the rostrum, and in private gathering, he had the power and the will always to rouse minds and to move feelings to fruitful thought and fresh appreciations. His view of intellectual activity was ample and vital, and he imparted this largeness and quickness of interest to all who heard him. His courses in philosophy were for all eager intellectual adventures, and for many they were the beginning of lasting devotion to ideas, to truth and to beauty.

But Professor Rebec was not only an intellectual force, he was also by deep conviction a worker for practical social good in his commonwealth. As such he was an active member of various welfare organizations, the Oregon Child Welfare Commission, Oregon Anti-tuberculosis Society, The Civil Liberties League, Oregon Infant Welfare Board, and the Oregon Workers Club.

In the death of George Rebec his many good labors remain in the lives of those with whom he was associated as teacher, colleague, and friend.

(Committee on Memorial Resolutions, Pacific Division)

(George P. Adams)

(Bertram W. Jessup)

(Harvey G. Townsend, *Chairman*)

PAUL MARHENKE, *Secretary-Treasurer*

EASTERN DIVISION

President: William K. Wright

Vice-President: Cornelius Krusé

Secretary-Treasurer: Roger W. Holmes

Executive Committee: The foregoing officers and Brand Blanshard, *ex officio* for one year, J. H. Randall, Jr. (1945), John Wild (1945), George F. Thomas (1946), Donald C. Williams (1946).

Although no meetings were held during the year, the Executive Committee considered, through correspondence, the advisability of resuming meetings of the Division. In June it was voted that meetings should be resumed as early as possible. It was felt that meetings should not be held at the Christmas season because of the heavy burden on transportation facilities. After exploring possible dates, the Committee decided upon February 22 to 24. An invitation was received to hold the meetings at Hunter College and this invitation was gratefully accepted.

It was planned to receive the Carus Lectures, by Professor Morris Cohen, at this time. The rest of the program, as planned, was as follows:

Symposium:

The Distinctive Contribution of
Philosophy to the Issues of War

and PeaceH. W. Schneider, G. R. Morrow

Concurrent Sessions:

The Role of the 'Standard' Mind

in ArtBertram Morris

Art between the Distinct Idea and the Obscure Soul	Katharine E. Gilbert
Content and Context in the Theory of Art	Abraham Edel
Matter: The Unanswered Challenge	H. A. Overstreet
Integrity as a Standard of Value	James Gutmann
Retributive and Distributive Justice	Lucius Garvin

Presidential Address:

Current Strictures on Reason	Brand Blanshard
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Symposium:

Metaphysics: Its Function, Consequences, and Criteria	J. H. Randall, W. E. Hocking, S. Lamprecht
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Address:

Comparison between Present Day Tendencies in North and South American Philosophy	Cornelius Krusé
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In compliance with the renewed request of the Office of Defense Transportation to cancel meetings involving railroad travel, the meeting for which this program was planned was cancelled. The Executive Committee felt, however, that certain items of business could not longer be postponed, and that the officers should withdraw and give place to others. Accordingly, a mail ballot was held for the election of officers and of members of the Division. The following officers were elected:

President: William Kelley Wright

Vice-President: Cornelius Krusé

Secretary-Treasurer: Roger W. Holmes

New Members of the Executive Committee: George F. Thomas (1946),
Donald C. Williams (1946).

The following nominees, recommended by the Executive Committee were elected to membership: Henry D. Aiken, Hippocrates G. Apostle, Maximilian Beck, John G. Brennan, Helen C. Brodie, Victor Butterfield, Roderick M. Chisholm, William C. Christian, Jr., Thomas A. Cowan, Robert Cushman, Israel E. Drabkin, Roderick Firth, Charles E. Gauss, William D. Gould, George Gurvitch, Hunter Guthrie, Eugene C. Holmes, Frank H. Knight, Alexandre Koyré, Armand Lowinger, Paul E. Pfuetze, Ben-Ami Scharfstein, William M. Sibley, Eugene H. Sloane, Russell W. Stine, Paul Tillich, Atwell R. Turquette, Jean Wahl, Sarah M. Watson, Hugo C. M. Wendel, Sidney Zink.

The following were elected to associate membership: Virgil G. Hinshaw, Jr., Oskar Piest.

The following is the report of the Treasurer for 1944:

Receipts:

Balance brought forward	\$2,426.21
Dues collected for 1944	776.00
Accrued dues collected	88.00
Interest	37.50
<i>Total</i>	<i>\$3,327.71</i>

Disbursements:

Dues to National Association	\$ 246.33
Expenses of Program Committee	68.30
Printing	45.91
Postage	70.35
Secretarial Aid	67.16
Telephone Toll	1.40
Bank Charge	1.13
<i>Total</i>	<u>\$ 500.58</u>
<i>Balance on hand</i>	<u>\$2,827.13</u>

Audited by John W. Blyth and Raymond F. Piper

In the spring of 1945 and after the cancellation of the meeting scheduled for February 22-24, President Brand Blanshard sent the following communication to members of the Division:

The last meeting of the Eastern Division occurred in the month of Pearl Harbor. No one then expected that it would be four years before we met again. Twice in those years, once in 1942 and again last month, the Executive Committee arranged to resume the annual meeting and prepared a program in detail, only to be held back in the final stages by requests from the Office of Defense Transportation. These requests were not commands. It would have been possible to devise meetings which complied with the letter of the law. But in both cases the committee considered that compliance with the spirit as well as the letter was called for and in this it appears to have had the wholehearted support of the membership. Its pledge, of course, still stands to call the Division together at the earliest practicable moment.

Meanwhile the Association has not been merely marking time; its committees have remained actively at work. The committee charged with preparing an introduction to philosophy for post-armistice use by the forces has completed its task. It has prepared not one book but three—a new text entitled *Preface to Philosophy*, and two books to accompany this, an anthology of readings and a work-book of questions and exercises. These are now in Macmillan's press, and will soon be issued in both military and civilian editions.

The Commission on Philosophy in Liberal Education has also completed its work. The conferences it held between December, 1943, and February, 1944, in New York, Boston, Chicago, San Francisco, Los Angeles, Baltimore, and New Orleans helped to fill the need created by the suspension of regular meetings. Its report, which has been written for the educated public and not for teachers of philosophy only, will be published soon by Harper's under the title *Philosophy in American Education*. A booklet of enlightening excerpts from the Commissions' large correspondence will occupy an early number of the *Philosophical Review*.

During the week of September 24 to 30, 1944, an international congress of philosophy, which was attended by many Latin-American philosophers, was held at Port-au-Prince, Haiti. With the aid of the State Department, the American Philosophical Association sent its multilingual general secretary, Cornelius Krusé, who represented us; and papers were submitted, though *in absentia*, by A. C. Benjamin, C. J. Ducasse, W. P. Montague, William Seifriz, W. T. Stace, Paul Weiss, and John Wild. Professor Krusé has described this Congress in the *Journal of Philosophy* of January 18.

As we look forward to the months immediately ahead, it is hard to predict what demands will be made upon us and our subject. Many expect that among the men returning from service there will be an impatient influx into

courses that give vocational training. Others believe that the long and enforced preoccupation with the business of war will breed a desire to forget it all in non-utilitarian studies, and that philosophy will be widely and eagerly sought. Both views may well turn out to be true. We must apparently be prepared for the swelling classes of interested and mature but imperfectly equipped students that confronted us after the last war; and departments of philosophy as well as college administrations are beginning to lay plans for them. As we lay these plans, there is one group of men that we should perhaps specially bear in mind, namely those who had completed their graduate study in philosophy but were called into service before gaining appointments to teach; there is known to be some apprehension among them regarding their future. In the end they will be better teachers, not worse, for the experience of these years, and they should be assisted in all practicable ways to get their start in the profession.

Several members of the Executive Committee are taking this occasion to retire from office. The terms of Mrs. Gilbert, Miss Shearer, Mr. Nagel, and me would have come to an end in 1942 if the annual meeting had been held; we were retained in office for a second year under the terms of our election, and for a third year by the vote of the membership, taken by mail. We appreciate very deeply this continued support from our colleagues, but we are united in feeling that our names should not be presented again. The Nominating Committee has therefore been asked to prepare a new panel of officers. We have held office longer, lived a more shadowy existence, and lived it in more shadowed times, than any other officers the Association has had. May that unenviable record remain unique!

BRAND BLANSHARD, *President*

The following memorial notice was prepared by Professor Hocking:

James Bissett Pratt, born in Elmira, New York, June 22, 1875, teacher of philosophy at Williams College since 1905, and one of the early members of this Association, of which he was President in 1934, died in Williamstown January 15, 1944. He had retired from teaching in June of the previous year; but up to a few days before his death had continued informal weekly meetings with a graduate student in Oriental religions. On the eighth of January he suffered a stroke after which he lingered only a week, lapsing quietly into peace.

The record of his professional achievements and of his writings is appended to this report: here I shall comment on some of the matters which we as his colleagues would wish especially to recall.

We remember him through many years as a thinker, vigorous, genial and influential. He wished to persuade; his convictions were strong and definite; he had a gift of clear expression, and he was exceptionally skilled in that difficult art of being firm on his own ground and respectful of the convictions of others, so that he was a welcome ferment in the thinking processes of this group of his associates as well as in his teaching.

Thus he became a leader in defining and promoting a school of thought. He contributed to the volume *Essays in Critical Realism* published in 1920, marking his departure both from the New Realism and from the Idealism of Royce. He had already expressed his discontent with the pragmatic movement, or perhaps his bewilderment at its variety, in his early essay, *What Is Pragmatism* (1909). (As a graduate student he had been a member of the class in which William James first worked out the ideas published as *Pragmatism*.) He further developed his theory of knowledge and at the same time his metaphysical views in his books *Matter and Spirit* (1922), *Personal Realism* (1937) and *Naturalism* (1939). In 1937 he attended the meeting of the International Philosophical Conference at Paris as representative of American Dualism; and it was fitting that he should be called upon at that time to speak at the Sorbonne on Descartes, on the three hundredth anniversary of the publication of Descartes' *Discours de la Méthode*.

But Pratt was interested also in metaphysics at work in human life in

the form of those streams of tradition and belief we call religions. This concern led him both to psychological analysis and to extensive studies in the field. He sought out the living religions in their native haunts. During his first sabbatical, 1913-14, he visited Burma and Ceylon; from these studies came his book *India and its Faiths* (1915). In 1923 and 24, he travelled in Japan, Korea and China, teaching during a part of this time at Yenching University, Peking. In 1931 he again came to India, via Java and Indo-China, and was welcomed as a teacher in the great school of Rabindranath Tagore at Santiniketan. From the earlier travels had already come the notable book, *The Pilgrimage of Buddhism* (1928); and from them all came his last book, *Can We Keep the Faith?* (1941).

Meantime his views on the psychology of religion had been ripening. His first book, *Psychology of Religious Experience* (1907) was followed in 1920 by his text, *The Religious Consciousness*, the most systematic and understanding treatment of the psychology of religion which we have in English, and perhaps in any language.

I would like to speak especially on *The Pilgrimage of Buddhism* as a triumph in the field of American scholarship, and one which scores on a mooted point of some importance. In the search for ideas, travel is useless unless one brings with it an exceptional sympathy and an ability to interpret, beyond the words of the speaker, what the speaker means. Pratt, who in many Asiatic lands was dealing with religious thinkers and devotees of many tongues, with monks and priests and simple folks whose beliefs were all but inarticulate, was assuming a task apparently impossible. He could not learn all their languages; so far as conversation was concerned he rejected the responsibility for any of them. But as a scholar, he kept his careful interest in the technical terms of these often intricate systems; and aided by his extraordinary capacity to elicit confidence and the desire to explain, he was able to produce not only the best current account of the historical career of Buddhism, but a book which commands the respect of the linguists for its contribution to the interpretation of philosophic concepts in the Orient.

As a teacher, his college by common consent gave him the leading place. In conferring upon him in 1943 the honorary degree of Doctor of Letters, Williams College cited him as one "who by his incomparable teaching and by his example made philosophy a living force." He also exhibited the value of continuity of place, the permanent worth of being at home somewhere. The honors bestowed on him were many, as were the invitations to take post in other institutions; he preferred to remain at Williams. The Berkshire Hills were a part of his life, and that of his wife Caterina Mariotti whom he married in Milan in 1911. Until the trouble which involved the amputation of a leg in 1939, he was a devoted climber of the mountain trails. The courage and good cheer with which he bore this affliction must be a part of the record of his quality as a philosopher; he gave us a mark to rise to.

In this Association we realize that one of our oldest and dearest of living links is absent. We miss his comradeship, his wise counsel, his quiet, substantial utterance, his whimsical humor. We recall with gratitude his rare capacity for friendship and sympathetic understanding. In his *Adventures in Philosophy and Religion* (1931) he has given us a personal reminder of the range of his spirit. Leaving us with a sense of a life fully lived and professionally honored, he would also like to take his leave with a touch of the joy of the man who can give death a welcome, convinced of its rightness and of its relativity as well as of the rightness of life.

(William Ernest Hocking)

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- 1906-13, Assistant Professor of Philosophy, Williams College
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